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Marxism Today

PETER THOMAS — THE EXPLORATION OF SPACE

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Marxism Today

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Exploration of Space

Peter Thomas

THE successful launching of a series of earth satellites and, most recently, the Soviet artificial planet, have aroused enormous popular interest. Reasonably enough, one of the most frequent questions on this topic asked of scientists by the layman is: "What practical use are these experiments?" To answer this question we need to look at the experiments in some detail.

Already, from measurements made possible by the earth satellites, we have learned a good deal about the composition of the upper regions of the earth's atmosphere and also about meteoric particles and cosmic rays in these regions. But there are several questions that cannot easily be answered by experiments carried out at relatively small distances from the earth, and the satellites have all been within a thousand miles or so of the surface, which by astronomical standards are very small distances indeed. Such questions can be much more effectively answered by the artificial planet, which transmitted information to the earth from distances of more than a quarter of a million miles.

The first problem was to lift the last stage of the rocket, weighing itself about a ton and carrying 800 pounds of instruments, and to guide it on a calculated course to an accuracy of a fraction of a degree. This in itself was an extremely difficult task, but the sputniks had indicated that it was within the limits of Soviet rocket design.

Since the rocket was to travel on a course which would rapidly take it out of range of observation, it was important to identify its path as accurately as possible. To help in this, a device was incorporated which after a precisely determined time, evaporated about two pounds of sodium in a few seconds. This sodium cloud absorbed light from the sun and then re-radiated it. Since the light given out by sodium in this way is all concentrated in a distinct yellow colour (that seen with sodium street lighting), it was comparatively easy to observe with high accuracy, using astronomical telescopes. This greatly helped in fixing the path of the instrument container in space.

In order to ensure that the instruments operated at a correct temperature and were neither cooked nor frozen, the outside of the instrument container was specially treated so that it absorbed and emitted the right amounts of heat. By this means its temperature was maintained at around 70°F. The inside was filled with gas circulated by a fan to assist in maintaining a uniform temperature.

Cosmic Radiation

One of the subjects investigated by the instruments carried by *Lunik* was the cosmic radiation. Since the ninteen-twenties it has been known that an atomic radiation falls on the earth from outside its atmosphere. Some of the particles which make up this radiation are travelling at enormous speeds and thus are of very high energy. In consequence, when they come into the earth's atmosphere they can interact violently with the atoms of the atmosphere, breaking up their nuclei, and creating in the process more radiation, termed secondary cosmic radiation.

So far, all our investigations of cosmic radiation have been made on the earth's surface, or at altitudes of a few tens of miles using balloons, or a few hundred miles up in satellites. By these means we have been able to learn a lot about the secondary radiation, and quite a bit about the composition of the primary radiation. But it is not at all easy to find out much about the original directions of the primary radiation. This is because the primary radiation consists of particles which carry an electric charge. Since they are moving, they effectively constitute an electric current, and the magnetism of the earth exerts a force on them. Consequently their paths are curved. This curvature may be very slight, but over astronomical distances the effect is sufficient to make it difficult to study the original distribution of the primary radiation.

Another effect of the earth's magnetism is to trap relatively slow, low energy particles in a belt around the earth, where they go on going round for a long time. The existence of this belt of radiation was first detected by measurements in a satellite and the intensity of the radiation,—i.e. the number of particles, is very large. It is in fact large enough to present a serious health risk to anyone attempting to travel in space.

Hence we see that useful information may be obtained from cosmic ray measurements carried out by a moon rocket. *Lunik* carried instruments to detect the cosmic radiation, to measure the num-

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ber of particles in various ranges of energy and also the total effect that the radiation produces in a gas. These results were transmitted back to earth by the radio transmitters carried in the instrument container.

Other Forms of Matter

In addition to the cosmic radiation, we find other forms of matter in inter-planetary space. Chiefly, this is in the form of hydrogen, split up into its two constituent parts—the positively charged nucleus of the hydrogen atom, which is called the proton, and a light negatively charged particle — an electron. The evidence for the existence of this gas is at present mainly indirect and is based on observations of two kinds.

Firstly by measurements on what is called the zodiacal light. This is a faint glow which can sometimes be seen on a clear moonless night. It is caused by minute particles of dust illuminated by sunlight. We can measure the characteristics of this light by suitable instruments in observatories. Now the nature of the zodiacal light which reaches us is affected by the distribution of electrical charge in the region where it originates, and from measurements on the zodiacal light it has been inferred that interplanetary space contains between 600 and 1,000 electrons to the cubic centimeter. From this we conclude that there is about this concentration of hydrogen atoms in interplanetary space.

Secondly, a similar conclusion can be reached in the explanation of what are called whistling atmospherics. These are effectively radio waves and can be heard on suitable receivers on earth. Again, these can be explained by concentrations of about the same numbers of electrons in space.

However, alternative explanations can be found, and in order to settle this point, *Lunik* was equipped with devices known as proton traps. These are arrangements of conductors maintained at different voltages so that any protons encountered by them are swept up, sorted into different groups, and counted. As with the cosmic ray counters, the results were transmitted back to earth. From the results it should be possible to decide more definitely about the concentration of the interplanetary gas.

Meteorites

So far we have only discussed problems associated with particles of atomic size. Another source of considerable scientific problems concerns much larger particles—the meteorites. Large meteors are very infrequent, but there are considerable numbers of very small ones. The tiniest particles are the most numerous. These are only a few ten-thousandths of an inch in diameter. They frequently move about in large groups, and so far most of our information about these particles, which are termed micrometeorites, has been gathered by observing the effect they have in diffusing the sun's light, or by tracking them with radar. But with *Lunik,* as with the satellites, it was a simple matter to provide detectors for the micrometeorites. In effect, these detectors are sensitive microphones. When a micrometeorite hits one of these gauges, the loudness of the noise it makes depends on the size and speed of the particle. The noises were sorted into three groups, according to their loudness, and the numbers in each group were counted and the totals transmitted back to earth.

Apart from the considerable scientific value of such information in connection with such problems as the origin and development of planetary systems, the size and number distribution of meteoric particles has a direct bearing on the future of interplanetary flight. Large meteoric particles can cause obvious damage, puncturing or even destroying rockets. But even the very small particles can cause changes in the nature of the surface of the rocket, altering its heat balance and causing it to get too hot or cold, as well as causing its windows to become opaque.

Magnetic Fields

Perhaps the most important of the instruments carried by *Lunik* was the magnetometer, used for recording the strength of the magnetic fields in space. The major part of the earth's magnetism may be plausibly explained in terms of the flow of large electric currents in the liquid core of the earth. But although we know something about the nature of the interior of the earth, we know very little about the interior of the moon. Until recently it was assumed, since there appeared to be no volcanic activity on the moon (and from some other considerations) that the moon's core was unlikely to be liquid. Consequently we would not have expected the moon to have a magnetic field. In order to measure the magnetism of the moon, it is necessary to get quite close to it. Otherwise the magnetism is masked by the earth's magnetic field. So the information sent back by radio from *Lunik,* giving the strength of the magnetic field measured along its path, may enable us to decide what the inside of the moon is like. Apart from this, the magnetometer readings could tell us something about the possible existence of electric currents in interplanetary space.

It is clear therefore that the experimental measurements carried out by the Soviet artificial

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planet, when the results are analysed and published, will make a substantial contribution to our knowledge in many fields.

From the point of view of scientists studying the behaviour of the atmosphere, the origin of the earth and planetary systems generally, even those studying inter-stellar space, the experiments have been very well worthwhile. Further, the testing of techniques has been carried a stage forward, and brought nearer the day when we can make much more elaborate experiments, giving us information not only about our own planetary system but also about other planetary systems in our galaxy, and even about some of the other galaxies in the universe.

But there is one more question that is often asked by laymen that has not been answered. It is usually posed like this: "The effort and expenditure on rocket experiments must be very large. Would it not be more profitable to mankind if this effort were to be put in some other direction where more immediate practical benefit might be more easily forthcoming?"

This is a complex problem, and cannot be answered properly at the end of a short article. It raises the question of the overall direction of scientific research. In fact, apart from such praiseworthy but very limited examples of international direction in science as the International Geophysical Year, there is no overall planning of scientific research in the Western world. In Britain and in America different sectors of science are directed by separate bodies—some by government departments (especially the armed forces in the U.S.A.), some by industrial firms such as A.E.I., or G.E.C., or General Motors or Bell Telephones, and some, but very few, by the scientists themselves (mainly in the universities).

So there is much duplication and much wasted effort. For an example of this in rocketry one has only to follow the American inter-service rivalries. In the U.S.S.R., the overall planning is in the hands of the scientists through the Academy of Sciences, working in collaboration under the direction of the Soviet Government.

Overall Planning of Research

Given an arrangement such as this, in which overall planning becomes possible, then the plan must clearly take into account the resources in material, technique, and scientific manpower before deciding on any particular piece of research. A balanced research programme would then devote a large fraction of the available resources to tasks which seem most likely to yield practically useful results. But there must always be a fraction of the resources devoted to "pure" research—i.e. research where the results may have no obvious practical value other than extending the bounds of our knowledge.

For although the immediate application may not be clear, it is most probable that in some cases the knowledge gained this way will later prove a vital basis for important new developments. As examples of this we can quote the research of Fleming into the growth of moulds which led to the discovery of penicillin, or the pure researches of Hahn and Strassmann and other physicists into the spontaneous splitting of uranium nuclei, which was one of the foundation stones of nuclear energy. These examples are well known, but countless others could be quoted. The investigation of interplanetary space can be put into the category of pure research and it is quite possible that the advances made in these experiments may one day prove to be of considerable direct practical value.

Of course, the development of the rockets which were used to lift both the sputniks and *Lunik* into space was not carried out in the first place with the sole aim of making these experiments possible. The rockets were developed under the same stimulus that developed the Soviet A- and H-bombs—military necessity.

Had this not been so, it is possible that the pace of space research would have been slower, for the cost of rocket development is very heavy and this development could hardly have been justifiably given such a high priority if it were to be carried out for the astrophysics experiments alone. If we set aside the development cost of the rockets, then the experiments have not cost such a lot in resources and materials and have been well worth while just for the knowledge of the universe that we have gained.

In conclusion, it must be said that space travel may be one of the most spectacular of the recent achievements of Soviet science, but it is far from being the only one. In all fields of scientific research, and especially in the physical sciences, the Soviet Union is advancing rapidly. The sputniks and *Lunik* are very important but they are only a foretaste. We can be certain that much more is to come.

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Where do we go from Shaw?

Ruscoe Clarke

"But always we need more knowledge; and this means controversial instead of dogmatic education." ("Everybody's Political What's What?").

TODAY in Britain it is surely correct to evaluate the first ten years of our National Health Service in terms of the immediate future. It is equally important to recognise that more is at stake than minor reforms. In 1956 Sam and Vera Leff wrote of the future of medicine:

> "By the end of the momentous twentieth century, the coloured peoples may well be freed at last from the horrors of diseases such as yaws, hookworm and bilharziasis. . . . The medical profession will leap from one victory to another. The triumphs over disease will lead the way to positive action to promote good health. . . .
>
> Imperceptibly, the revolution in medicine will come about, and with it the revolution in the health of all peoples. It has taken man millions of years of progress from the fear of witchcraft to the hope of world health; and from that first glimpse at the future it need take only a generation or two to reach the fulfilment of that hope; a world of healthy, happy people at peace." (*From Witchcraft to World Health*, pp.231 et seq.)

Who can quarrel with their socialist vision or their final emphasis?—for it is in the coming period that peace will be won. Nor dare we postpone discussion of such perspectives. Frederic Joliot-Curie proposed to the Stockholm Peace Congress, a few weeks before his death, that a special Commission should be appointed to study "the general problems relating to the reconversion of all forms of activity at present absorbed in the arms race." What more fitting tribute to this great scientist and humanist than that we should start today on that most thrilling of prospects?

But this involves much more than the logistical re-development of existing forces and potential. The world revolution in health will not happen any more "imperceptibly" than the social and economic changes now taking place in China. The speed of change will be obvious but the change will only take place at such speed because it has been conceived and planned in the minds of men. Historical developments have taken place without their historical velocity being appreciated by those involved—in the past—but this is no longer possible today when we stand on the brink of world transition from capitalist anarchy to communism.

This dynamic potential for change makes it essential to see in perspective the period through which we are passing. From the point of view of medicine this requires more than discussion of the extension of what we already know. The future is different—not just the continuation of the past at an accelerating tempo, nor merely with the brakes of capitalism released. Some of the differences lie as yet entirely in the future but some can be discerned today. Nor can we discuss this future in terms of the growth of science unless we recognise that science itself must be conceptually as well as economically and administratively emancipated from the restrictions of the age of mechanism.

* * *

From another angle let us review our aims in the field of health by turning to the writings of two of the socialist pioneers crying in the wilderness of the "Things to Come".

William Morris, in *How we Live and How we Might Live*, equates health with beauty:

> "Well, first I claim good health; and I say that a vast proportion of people in civilisation scarcely even know what that means. To feel mere life a pleasure; to enjoy the moving of one's limbs and exercising one's bodily powers; to play, as it were, with sun and wind and rain . . . to be well-formed, straight-limbed, strongly knit, expressive of countenance . . . that also I claim."

He saw poverty as the basic disease, with hunger and anxiety its most dangerous expressions. He even claimed that our people might neutralise many of the disadvantages of our climate "within a few generations of the abolition of the profit motive!" He concentrated attention on the role of leisure, art and work in a socialist society. He understood the general mechanism required for a change. He did not grasp the impact of science or elaborate any approach to health organisation.

Later, at a higher stage of the development of the movement, it was Bernard Shaw who focused attention most sharply on the problem of health. He concentrated his attack on the medical profession, but a complacent public did not escape his withering censure. His accusations have appeared to many to be so exaggerated that they could not be taken seriously. Yet it is no more true to say that Shaw was merely destructive than

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that his exposures are now so widely accepted that their punch is lost. It is necessary, however, to attempt to evaluate Shaw in general before considering the particular contents of his ideological invective. He, of all men, cannot be taken out of the context of his own rich, complex and contradictory totality.

* * *

I make no apology for re-opening matters of scientific controversy with the aid of allies from the "arts". The cleavage between science and the "humanities" is a product of capitalism and not, as is so often supposed, dictated by the needs of science. It is associated with the era of mechanism in science and has culminated in that deep cynicism which comprises the real content of the more degenerate forms of so-called abstract art. The cleavage has become established in our schools and universities to the detriment alike of science and everything else.

We are now entering a new renaissance in science without, in the West, any corresponding flowering of the arts. It is worth wondering if the healing of this cultural split may not prove to be a fundamental prerequisite for the flowering of the cultural renaissance which may precede as well as follow the transition to socialism on a world scale. Paul Robeson's exploration of the world-wide roots of folk music, his deepening of the content of popular music, have some most important elements of the application of science to art in its widest sense. One can begin to understand the interaction in practice. Certainly science cannot develop fully without its wider integration into society, which requires the removal of ideological influences that cloud its basic origins in social human thought and action. The future does not lie with the robot or the space-thug of fiction —but with man.

Some of the highest and most fully conscious of man's expressions of his adult humanity have come from that least abstract of all art forms—the drama. From the warmth and human awareness of Shakespeare, arising most intensely from the great tragedies, we skip three hundred years and even now it is almost heretical to accept the comparison.

Many of us learnt our socialism first from Shaw. Some of us were fooled by the slander that he was a good propagandist but an indifferent playwright. Finding his political theory inadequate we took Lenin's description of him as a "good man fallen among Fabians" to mean that he was politically labelled and tucked away on the shelves.

Admitting that Shaw played to the gallery; that he amassed wealth and left it for a trivial memorial; that his work is inconsistent, his punches sometimes pulled—nevertheless in his later years he made a habit of coming down on the side of the workers and the worker's State. As a Fabian, he was more of a renegade than the Webbs. Today the New Fabians are scraping the barrel for an ever more emasculating soporific. But neither these apostles of gradualism in reverse, nor the bourgeois leaders of culture, dare recognise the status of Shaw as a critic of science and a master of drama.

Sympathy for Revolution

Granted that he rejected Marxism; yet his socialism was based on analysis of existing society, appreciation of its economic basis, understanding of power, rejection of mechanism and a quality of inspired dreaming. The thesis that he was no dramatist can only be explained by the failure of producers or actors to recognise real people. For real people do interest themselves in politics and have arguments and discussions which can even be boring! Real people can be pedantic and inconsistent and still inspiring! Real people can change sides and even be types! His plays vary in their form, scope, mood and in their apparent seriousness of approach. Profundities are handled lightly and trivialities discussed seriously. But the trivial is often brilliant and the best packs a powerful punch.

Where else in the drama does anyone turn more consciously from the Bishops, Kings and Nobles as did Shaw's Joan?

> "I will go out now to the common people, and let the love in their eyes comfort me for the hate in yours. You will be glad to see me burnt; but if I go through fire I shall go through to their hearts for ever and ever. And God be with me."

Where is there more drama than in the Trial scene? The greatness of *St. Joan* lies in the fact that it has all the drama, all the understanding of class power and class politics, deep sympathy for revolution, a sense of history, a sense of modernity and—as it can be played—that most moving climax where the teasing Joan, the Joan before her time, the puckish human dynamo of a Joan who saw through all the lies straight to the depths of human sincerity, tells us where she stands—*where he stands*—

> "(The last remaining rays of light gather into a white radiance descending on Joan. The hour continues to strike.)
>
> 'Oh God, that madest this beautiful earth, when will it be ready to receive thy saints? How long, Oh Lord, how long?' "

Not if, but when! Here is confidence in a real future for the inhabitants of this beautiful earth, aye and for other worlds as well. Tragedy is a

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product of class society and ends with the advent of communism. But the drama will go on to enrich our deeper grasp of the meaning of hope through struggle, not for ever against men or class, but against ignorance and for the mastery of nature, against the ideas of the past that hang like a halter about our necks.

* * *

In the preface to *St. Joan* her creator ranges far and wide over subjects that are a thousand times more topical today than when he wrote. No Freudian got as near to Shaw in approaching the drive behind the revolutionary. We laughed at Shaw's "Evolutionary Appetite" and "Emergent Evolution", yet our burning thirst for the progress of mankind is just as real as our hunger for food. His attacks on science and medicine creep into this preface in the section on "The Modern Education which Joan escaped":

> "Which would be the saner Joan? The one who carried little children to be baptised of water or the spirit, or the one who sent the police to force their parents to have the most villainous poison we know thrust in their veins? The one who told them the story of the angel and Mary, or the one who questioned them as to their experience of the Oedipus complex? The one to whom the consecrated wafer was the very body of the virtue that was her salvation, or the one who looked forward to a precise and convenient regulation of her health by a nicely calculated diet of thyroid extract, adrenalin, thymin, pituitrin and insulin, with pick-me-ups of hormone stimulants, the blood being carefully fortified with antibodies against all possible infections by inoculations of bacteria and serum from infected animals, and against old age by surgical extirpation of the reproductive ducts or weekly doses of monkey gland?"

He continues:

> "It is true that behind all these quackeries there is a certain body of genuine scientific physiology. But was there any less a certain body of genuine psychology behind St. Catherine and the Holy Ghost. . . .
>
> "To Joan and her contemporaries we should appear as a drove of Gadarene swine, possessed by all the unclean spirits . . . running violently down a steep place into a hell of high explosives!"

His plea is not for a return to some earlier and more enlightened age but for a straighter look at our ignorance and how it can be hidden beneath a cloak of metaphysical jargon.

Theories and Myths

In earlier ages scientific theories were normally expressed in myths and allegories, only secondarily adopted and adapted to serve the purposes of reaction. The modern era of science under the bourgeoisie (there are grave dangers in the term "bourgeois science") is no exception. We are conditioned to see explanations and causes where all that exist are analogies and associations. We are trained to see things as existing independently of their interconnections when the justification for this particulate myth has long vanished with the dissection of the atom. Shaw saw the myths of mechanist science as of the same order of rubbish as the myths of past eras. He attacked them more bitterly because they were more widely and perhaps more dangerously held. He castigated mechanist science for jumping to final conclusions on the basis of limited information.

Do not let us be fooled by the old boy when he hits out simultaneously at mechanist metaphysics and superstitious idealism with his tongue in both cheeks! He intended to be provocative. It may not be the only approach to science but it has a part to play. The isolation of science from the arts has meant that many men and women today are scared of scientific jargon while the majority of those supposedly trained in science have little or no knowledge of anything else, often only a training in technology with no grasp of scientific method or thought. In the so-called exact sciences this is a danger to science—in the social sciences a danger to humanity. Shaw was no technical scientist—yet he saw the fallacies of contemporary scientific orthodoxy. He pilloried them in his plays, in most detail perhaps, riding one of his own hobby-horses (or rather in his chariot behind a team of them) and at his most provocative surely, in the *Doctor's Dilemma*.

Here indeed we are nearer debate than high drama but with something reminiscent of Greek Tragedy laced with the spice of Sheridan or Wilde. It is not just Don Bernard tilting against the windmills of Harley Street. He poses real problems most of which have never been resolved—medical fallibility—the cult of surgery—the effects of private practice on medicine—the slow emergence of a scientific approach in medicine—the onesidedness of the "germ theory of disease"—ethical aspects of the search for knowledge—the place of humanism in science—the crudeness of medical experiments—the illusions of statistics—the impact of the environment on health—the role of the unorthodox in medicine and science—the economic roots of disease.

That he exaggerates, particularly in his rabid attacks on vaccination and immunisation; that he has his own fetishes shared by others in revolt about the complacent inadequacy of the medicine of his day; that he is arrogantly savage in his attacks on vivisection; that he gropes for rather than proposes scientific answers to his questions—

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none of these things must be allowed to detract from the perspicacity of his criticisms and the quality of his caricature, often so near to real life as to be totally incredible.

Caudwell once accused him of conceiving his own beliefs as absolute truth capable of being imposed on the world by argument alone. Yet there is no evidence that Shaw felt more deeply about vivisection than about the need for a National Health Service. The fact that the latter has come about and that with it the cash barrier between doctors and straight thinking has been drastically reduced along the lines he proposed, is due to propaganda as well as mass action, and Shaw played his part. He was the greatest exponent of his own techniques of persuasion and we must allow him a certain poetic licence to stimulate discussion on the material content of his "idealist" overstatements.

* * *

Cutting for Fees

Now for the meat of Shaw's tirade. When most doctors in England had to earn a living by piecework payment for consultations or treatment it was not surprising that surgery should be dramatised and glamourised. As soon as it became relatively safe it became absolutely profitable. The effects of this vested interest in cutting for fees linked with the crude thinking of the day before yesterday still colour much of medical practice today. With the financial inducements partly removed, the operating theatre still too often occupies the centre of the stage and since there are not enough surgeons to do all the operations considered necessary, the majority of them do not have time to make sure that their technical virtuosity is always in the interests of the patient. Operations are still done because the books say they ought to be. The profession of surgery is aware of many of the difficulties.

There have been great advances not only in technique but in team work and collective evaluation of results. But it is still more attractive to describe successful operations than to write about those that have failed. Careers are chosen primarily for the sake of technical, theoretical or practical interests of doctors as individuals. Shaw was right to demand more control over the direction of development of professional activities. The provision of medical attention must be based on the needs of patients. Techniques of planning are improving but are still in their infancy. The ideological influences discussed by Shaw are still relevant.

But surgery, though one of the most colourful, was perhaps the least important of Shaw's targets although it serves to show the relevance of his art to reality. What about the "germ theory" and his attacks on "Saint Louis" (Pasteur)? Germs exist, even the viruses and phages can now be seen with the electron microscope. In the simplest sense they cause disease. Their suppression may prevent disease. The point is that medicine is only now emerging from a phase when it appeared to be obsessed with Pasteur's overstatement of his case —that all diseases were directly due to specific germs so that it was just a question of finding which germ was responsible. Linked with this was the general concept that we were dealing with "diseases" in isolation from sick patients, from which followed the concept that each disease must have its own specific cure—an ancient concept refurbished by the would-be Colenso Rudgeons with growing support from the monopoly drug houses. The germ concept was developed to suggest that if the germs could not be found in the diseased part they must be hiding somewhere else. The search for "focal sepsis" led to the mass removal of teeth, tonsils, appendixes, gall-bladders and other dispensable organs, in the vague hope that profit of some kind might ensue—which in fact it did. Here Shaw did not exaggerate.

Today things are changing. Many germ diseases are controlled by the anti-biotics. There is a clearer recognition that other conditions once classed as bacterial in origin require a many-sided approach. The point of Shaw's instruction in the preface to the *Doctor's Dilemma,* to "take the utmost care to get well born and well brought up", is documented by the Registrar-General's statistical analysis of deaths by occupation and social group. There still exist for many diseases big differences in mortality that depend on social status; on income, food, place of work, atmospheric pollution, fundamentally on class. The simple mechanist formula germ X equals disease Y is just not true. But this type of conceptual thinking is often regarded as a logical basis for treatment or at least for the latest plugged product of the pharmaceutical alchemists.

As for vaccines, vaccination and other bacteriologically contrived inoculations: they have certainly played their part in the subjugation of many terrible diseases all over the world. But excessive credence in their uniform efficiency has meant that hundreds of millions of useless injections have wasted a lot of money and caused a moderate amount of harm. We are beginning to learn something about the tactics and strategy of scientific evaluation of new remedies, but commercialism makes it very difficult. Scientific assessment of the products of modern synthetic chemistry is only just beginning, but thousands of

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frustrated scientific workers continue the unending search for a Penicillin for Cancer or a specific remedy for "blood-pressure" by methods that are often wastefully crude in their planning and conception. Science could be organised to build the bomb: but that required much more than throwing bits together and hoping they might blow up. Science can do much better when it gets down to human problems on an internationally organised scale.

Shaw's attack on animal experiments

Which brings us round to the curiously extended "humanism" of Shaw's virulent attacks on animal experiments. Certainly such experiments can be wasteful and ill-conceived. Certainly the most useful experiments are carried out on animals that are well treated! Certainly animal experiments can be dangerously misleading when the results obtained are mechanistically applied to man without an appreciation of what is different! But I believe that animal experiments are necessary, and beg to differ. When we come to man there is today a veritable ferment of discussion in professional circles on the ethics of human experiment.

But first let us get some things clear. From one point of view every act of treatment that is not just like what has been done before is an experiment. If the treatment appears to be the same but the patient is different, it is still an experiment. In any case the result must be carefully observed and evaluated. Otherwise we do not progress at all. With a patient clearly on the verge of death it is obviously not a question of whether to experiment or not but whether any particular kind of treatment, old or new, is worth considering. This is a question of medical judgment and not ethics. The real problem is not that of whether new treatments should be tried out or how this should be done, nor even under what conditions the patient should be told of the risks involved. The problem crops up in the form Shaw raised it when we make observations on patients for the sake of acquiring knowledge, when the observation involves a possible risk or even discomfort without any prospect of benefit to the patient in question.

Topically the problem acquires a special emotive significance when we consider tests involving the administration or injection of tracer doses of radio-active isotopes. The dose has been calculated. The known risk is less than that of an X-ray picture which a few years ago would have been taken with little thought of its contribution to the genetic aftermath. Is the test ethically justified for the sake of knowledge that may or may not benefit someone else? Does it matter that the knowledge gained from a minor risk to a hundred patients may in a few years or months help to save hundreds of thousands of lives? Or that it may only play a small part in saving an occasional life or making a few people get better quicker? Or that it may lead nowhere at all? Is this a problem? It was certainly a problem when the Nazis used their prisoners as guinea-pigs and claimed exemption in the name of science!

In fact what is needed is a simultaneous approach to the welfare of the individual and the welfare of humanity. Minor risks must be run. We have a moral duty to advance. Major risks must be calculated and planned on the basis of the widest possible human understanding. The problem is not solved by getting the patient's consent, which may be given on the basis of blind faith in a particular doctor or hospital—a faith that Shaw suggested often amounted to extreme gullibility yet might be necessary at the particular phase of mutual ignorance. Here surely Shaw cannot be accused of having "sugared the pill". He attacked so violently that we have run away from discussing even those parts of his theme where there is agreement that discussion is necessary not so much with the individual patient but amongst doctors and patients at large!

The real point is this. Our political demands include more money—more building—more and better paid ancillary staff at all levels—better working conditions for doctors—and more doctors. The provision of this within the existing framework would do much to pave the way for major advances in medical science and treatment. Do we at the moment need to discuss more fundamental themes? Do the onslaughts of Shaw belong to the past, the future or the present?

* * *

Today there are lessons to be learnt from the Soviet Union, perhaps tomorrow, equally from China. In the early days of the first socialist state it was suggested that the improvement of environmental conditions might replace the need for medical care—the theory of the withering away of the doctor. In practice this was immediately seen to be totally fallacious. More and more doctors have been needed to staff an ever developing health service. The biggest advances were made in public health and preventive medicine. The health services in the bigger factories, and the magnificent sanatoria on the Black Sea and in the mountains, call to mind the dreams of William Morris.

Curative medicine in polyclinics and hospitals developed qualitatively more slowly and to some extent in a surprisingly orthodox manner. There were pockets of outstanding competence but the

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primary provision was of a lot more of what existed before and exists elsewhere. Individuals pursued fascinating unorthodox lines of treatment and research; some very good, some less good, some dangerously misleading. It was not until 1950 however that any attempt was made to give a directional lead to medical teaching or research at an ideological level. Then, following the earlier debate on the work of Michurin, the Academy of Medical Sciences staged a joint debate with the Academy of Sciences on Pavlov. Political angles diverted attention from the intrinsic content of these discussions and from the historically important fact that such nation-wide discussions took place at all. A century after the *Origin of Species* it is worth taking another look at these controversies in relation to our understanding of the mechanisms of evolution. The first high-lighted the need to modify rigid formulations of the gene theory; the second raised the question of the inheritance of conditioned reflexes as a basis for the transmission of environmentally induced changes in the behaviour pattern of animals and man.

Shaw's view of evolution

Shaw's concept of "Emergent Evolution" appeared to many as a form of theism. Yet Newtonian physics required a "Prime Mover" and all philosophic systems pretending to completeness left so much unexplained that a god could creep in by the back door. The classical Morgan-Weissman description of the control of heredity is just as metaphysical as Newtonian physics and can still only explain change on the basis of chance mutations arising wholly external to the nuclear machinery and its cellular environment.

Shaw approved of Lysenko (*Labour Monthly*, January 1949) as in the line of succession from Lamarck and Samuel Butler via Shaw himself. He tried to explain away his disagreements by suggesting that Lysenko only paid lip-service to Marxism. Here Shaw comes unstuck through his own failure to come to grips with conscious dialectics. The exaggerations of Lysenko detract little from the catalytic effect of his criticisms and the need to combat the inadequacy of much orthodox thinking. Western scientists continue to publish the results of experiments that expose the limitations of the gene theory. The important fact is not that the problem is still unsolved but that it was sharply posed in a new way.

In his search for a fuller explanation of evolution Shaw was confused by his rejection of the only theory of society which recognised a scientific basis for the special position of the human species. He admired Pavlov for attempting to analyse the working of the human brain, but castigated his methods and conclusions (*Everybody's Political What's What*?). His formal case rests on the accusation that Pavlov was handicapped by two unconscious conditioned reflexes which sabotaged his clarity of thought! Firstly Pavlov is accused of extending the nineteenth-century revolt against "an old tribal god called Jehovah" to the denial of "any metaphysical factors in life whatsoever, including purpose, intuition, inspiration and all the religious and artistic impulses." Secondly he is accused of getting science confused with religion and transferring his "reflex" need for ritual sacrifice into an insistence on the need for animal experiments. Shaw's vitriolic attacks on Pavlov, inspired by his own prejudice against such experiments, prevented him from understanding that it was Pavlov, in the direct line of descent from Claude Bernard and the best scientific physiologists, who did most to demonstrate the working of the human brain in such a way as to explain the mode of action of environmental and social influences. It was Pavlov's account of the second signalling system that provided the physical sub-stratum for the process of man's emergence from the animal kingdom (as described by Engels) to become a tool-using, tool-making, social speaking animal, able increasingly to control his own environment; incidentally still much more complex in his evolution and functioning than any of the complex systems of electronic servo-systems which he can now make and control. It was Pavlov's work in the function of the human brain that makes it possible to envisage a genuinely materialist approach to the very phenomena he was accused of excluding. Shaw's philosophical criticisms of Pavlov confuse the latter's rejection of a subjectivist approach with the behaviourist distortion of the conditioned reflex theory. Pavlov made it clear that his approach paved the way to a scientific study of the whole range of man's activities including their ideological expressions. Shaw remained philosophically an idealist.

Revolution in medicine

We are in the early stage of a revolution in medicine which derives much from the application of tools and methods from other sciences. But this application will require a new type of basic education and a new type of team-work. For this to be effective we shall have to clear the Augean stable of a vast array of traditional half-proved half-truths which have been passing muster as established facts. We are only now beginning to appreciate the full extent of our ignorance at a time when in certain narrow fields our knowledge is advancing faster than ever before. The use of

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our opportunities requires an analysis of the fallacies attacked by Shaw. The rejection of metaphysics is hard work. It is a mistake to deify Pavlov or Lysenko but a much more serious mistake to fail to appreciate the point of their criticisms and their contribution to science and the battle of ideas. For physiology and medicine the fact that the Pavlov debate took place is more important than that it might have been organised differently or that its meaning is not yet fully appreciated even in the Soviet Union.

In one way Shaw went further. He saw the link between the need for new biological theory and the need to get rid of orthodoxies in medical behaviour and organisation as well as theory. The need to be scientific in medicine requires an appreciation of the full extent of the human problems involved. The facts of disease depend to a large extent on individual factors in the patient himself in relation to his environment: the fate of diseases depends to perhaps an equal extent on relations between doctors and patients. Unless these things are grasped scientific study will leave out at least half the relevant data. There is no conflict between science and humanism, only between half-baked science and a pretended humanism that omits science from its curriculum. Modern scientific methods open up the possibility of studying varieties of change in ever greater detail. They require an even greater appreciation of the complex nature of the processes that may be concerned in such changes.

The medical scientist must become increasingly aware of the limitations of communication and the barriers to influence that arise from social causes. In the capitalist countries and to a lesser extent elsewhere doctors may differ from the majority of their patients by reason of their class origins and environments. They differ also from the continued existence of the traditions of a professional caste. It is not enough to envisage more workers becoming doctors. The doctors themselves have got to learn to become ordinary people and that not only off duty. There need be no loss of dignity but real democracy requires assimilation. Shaw grasped much of this. The facts remain and the solution is not easy. It requires in the first place much more time spent on the individual patient and with the individual patient. This means more doctors than most people have ever imagined, working in entirely new ways. They must have time to understand the full implications of illness and the individual, more time to explain, more time to learn not only from books and discussions and medical meetings but from patients, from men and women with different combinations of experience of life. The patient and the doctor must be much better informed so that they can discuss problems that appear now to be questions of ethics but may later emerge as problems of social planning. The very conception of Ethics as something in some way apart from science or politics may well have its roots in a combination of ignorance and a class society wherein the interests of the individual appear to be in conflict with the interests of the group. The doctor will develop by becoming a genuine member of a genuine team. The barriers between specialities will be replaced by the pooling of experience and the focusing of differing skills on a shared problem. With this must come closer links between medicine and education, between medicine and sport and art and culture. Where previously we have amateurishly dabbled on the fringe, we must aim to release the great forces of music and literature, of poetry and drama and painting, to add inspiration to the search for physical fitness and work that is a joy and an adventure. The attainment of Morris's dreams requires a new integration of man with man which depends on the abolition of class society but goes far beyond the mere abolition of class barriers.

So we *must* start wondering whether we assume too readily that all we need is a change in quantity, when in fact the change required must be of a more profoundly revolutionary character. In medicine we must learn to minister to the sickness of a whole man, not by black magic or a bottle of medicine, not just by vaccines or surgery, but by the full use of the rich potential of this planet, while others pioneer the way to the stars.

For all the apparent cynicism of his attacks on bourgeois society, it is the basic richness of life that inspired Shaw's dreams:

> "Of life there is no end; and though of its million starry mansions many are empty and many still unbuilt, and though as yet its vast domain is as yet unbearably desert, my seed shall one day fill it and master its matter to its uttermost confine. And for what may be beyond, the eyesight of Lilith is too short. It is enough that there is a beyond." (*Back to Methuselah.*)

Something of this spirit is needed today to break down the apathy and tiredness that can so easily invade our spirits from too close a contact with a dying western imperialism. We have to become convinced that life is worth living, that change is excitingly (but not imperceptibly) inevitable if only we learn to make it so.

Meanwhile the way forward depends simultaneously on our power to dream scientifically and our power to act in unity. The concept of the

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leading role of the working class in the fight for progress implies their leadership of other sections including the intellectuals. We shall not do this by any compromise with established principles nor by allowing any illusion that emasculation of our aims can lead anywhere but backwards. We shall not lead by succumbing to the wiles of metaphysicians seeking intellectual short cuts to a social-democratic heaven. We cannot run away from the realities of power, from the link between war and class society, from the need for struggle. But here too we can learn from Shaw once we recognise drama and dialectics as reality:

> "You cannot have power for good without having power for evil too. Even mother's milk nourishes murderers as well as heroes," says Cusins to Undershaft in the concluding scene of *Major Barbara*.
>
> "As a teacher of Greek I gave the intellectual man weapons against the common man. I now want to give the common man weapons against the intellectual man. I love the common people. I want to arm them against the lawyers, the doctors, the literary men, the professors, the artists and the politicians, who once in authority are more disastrous and tyrannical than all the fools, rascals and impostors. I want a power simple enough for common men to use, yet strong enough to force the intellectual oligarchy to use its genius for the general good."

Here too he posed the problem without stating the answer. But the power is there—a revolutionary class inspired by revolutionary ideas to which Shaw made a contribution. This surely is what the lawyers and doctors and artists and scientists must grasp before they can become part of the forward movement. . . . Cusins concludes:

> "Dare I make war on war? I dare. I must. I will."

The common people will at times have to take up arms in defence of their liberties, their lives, their heritage and their future. They need also to take up the cultural weapons, for these too can be turned against those who would use them to enforce subservience:

> "Come, Tommy," says Androcles to the Lion, "Whilst we stand together, no cage for you, no slavery for me."

Shaw ended in the hands of the doctors but may have the last word yet.

Economic Competition between U.S.S.R. and U.S.A.

(The Joint Economic Committee of the United States Congress recently published a report on "Soviet Economic Growth. A Comparison with the United States". A group of Soviet economists has prepared a reply to this report in the form of a book "Economic Competition between U.S.S.R. and U.S.A." We print below a review of this book, from the Soviet Industrial-Economic Gazette.)

WITH the growth of the achievements and prestige of the socialist world, it is becoming increasingly hard for bourgeois propaganda to distort Soviet reality.

The Soviet Union, and following it the People's Democracies of Europe and Asia, utilising the advantages of the socialist system, are waging a vigorous and successful struggle for a level of economic development higher than under capitalism. This competition is an inevitable stage in the development of world history.

An analysis, however, of the report, "Soviet Economic Growth: A Comparison with the United States," shows that its authors by no means proceed from the possibility of a long economic competition between socialism and capitalism on peaceful lines. They write not only about the Soviet "threat" but also about the inevitability of a "clash between East and West," etc. And this they do, naturally, in order to substantiate the rejection of peaceful co-existence between states with differing social systems; to justify the arms drive pursued by the United States and its allies; to mislead the masses of the people.

Questions connected with economic competition between the socialist and capitalist systems are fundamental questions of our era. And they deeply agitate the minds of the peoples of all countries. The Communist Party of the Soviet Union and the Communist and Workers' Parties

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of the other socialist countries focus attention on the task of socialism achieving victory over capitalism in the peaceful economic competition between the two systems.

The progress and perspectives of this competition are discussed everywhere—at conferences of bourgeois parties; at trade union congresses; at international and national congresses of the peace champions; in the United Nations; in Parliaments; among business circles of the capitalist countries; in extensive economic literature. A gigantic struggle between Marxist and bourgeois ideology is unfolding around these questions.

The rapid economic upsurge of the Soviet Union and the other socialist countries attracts great attention, especially in the United States, where numerous organisations are engaged in studying the economics of the U.S.S.R. and questions of the economic competition between the two systems. According to the *American Slavic and East European Review*, the United States, as early as in 1945, already had more than 150 scientific and pedagogical institutions studying various aspects of the development of the U.S.S.R. and the People's Democracies.

Also many government bodies are studying the socialist countries. They include, among others, the State Department, the military departments and the Central Intelligence Agency. The Federal Government and the monopolies allocate large funds for these studies.

Rates the World Has Never Known Before

Only socialism with its public ownership of the means of production and planned economic development in the interests of raising the welfare of all members of society can ensure high and stable rates of industrial development. In contrast to the Soviet economy, the records of American industry "jump" like the temperature of a man suffering from fever. In the past thirty years of world development (1921 to 1940 and 1947 to 1956) industrial output in the United States dropped repeatedly as the result of depressions. In the postwar years alone, economic activity declined there three times: in 1946, 1949 and 1954. Since the end of 1957 the production curve has again sharply slumped. As admitted by the United States bourgeois economist Leon Keyserling, former chairman of the President's Council of Economic Advisers, the United States in the past five years "has lost more than 78,000 million dollars' worth of potential output owing to the decline in normal production and about 8,500,000 man-years owing to the decline in full employment".

The gap between per capita production in the United States, Britain, France and the Federal Republic of Germany, on the one hand, and the U.S.S.R. on the other, is diminishing with every year. While in 1913 that ratio for the United States and Russia was 14:1, in 1957 the U.S.S.R. was behind the United States by a factor of only 2:4.

This allegation of the report that Soviet industry has developed at a slower rate than the industry of the United States and a number of West European countries in the early period of their industrialisation will not stand up to examination. During the period of 1929-37 the average annual rate of increase of industrial output in the U.S.S.R. was 17.1 to 19.2 per cent.

In Britain, even at its highest pace of economic development, in 1820-40, this rate did not exceed 3.5 per cent to 4.5 per cent. Germany had the highest rate of industrial production growth in 1880-1900 (4.7 per cent to 4.8 per cent), and the United States, in 1880-90 (8.7 per cent).

Myth of "Industrial Immaturity" of U.S.S.R.

Our country has already outstripped the United States with regard to the absolute annual increase in the output of many products. The average annual absolute increase in 1953-57 was higher in the U.S.S.R. than in the United States: for pig iron, 3-fold; steel, 11-fold; coal, 5-fold; cement, 2.7-fold etc. With regard to industrial production as a whole and all the decisive industries (excepting electric power) output in the U.S.S.R. increased faster than in the United States.

The apologists of the bourgeois system are trying to justify in every way possible the theory they have evolved of an inevitable slowing down in the rate of growth of industrial production in the U.S.S.R. Their arguments are far from original. They reiterate that industrialisation in the Soviet Union has not been completed, and the U.S.S.R. has not reached "industrial maturity". But as is known, the Soviet Union even before the Second World War produced more industrial goods than, say, Britain or Germany. In 1957 the U.S.S.R. put out 51.2 million tons of steel—as much as the U.S.A. in 1937. Now who is going to assert that the U.S.A. had not reached industrial maturity by that time?

The authors of the report on "Soviet Economic Growth: a Comparison with the United States" in every way exaggerate the industrial power of the U.S.A. and belittle the achievements of the Soviet Union. According to the report, depending on the methods of comparing the volume of production in the U.S.S.R. and the U.S.A.,

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"various data" may be obtained, ranging from one-half to one-fourth or one-fifth. Asserting that the truth lies somewhere mid-way, the authors repeatedly emphasise that, on the whole, the volume of Soviet industrial production was from 33 per cent to 34 per cent of that of the U.S.A. In reality it was from 40 per cent to 43 per cent of the U.S.A. figure for 1955 and rose to 47 per cent or 50 per cent in 1957. This is confirmed, notably, by the estimates of Prof. Donald R. Hodgman of California University.

A close study of the dynamics of individual industries shows that the most representative commodity, graphically reflecting the relation between the levels of industrial production as a whole, is steel.

The U.S.A. produced 106.2 million tons of steel in 1955 and the Soviet Union 45.7 million tons, while the corresponding figures for 1956 were 104.5 and 48.7, and for 1957 102.3 and 51.2 million tons respectively. So this example also confirms the conclusion that the level of industrial production of the U.S.S.R. in 1957 attained half of the American volume. The same results have been obtained from calculating the maximum number of items in kind at equivalent prices.

Given a desire for objectivity, it would not be so difficult to estimate the relation between the volumes of industrial production in the U.S.S.R. and the U.S.A. For it is clear from the report that its compilers gathered a vast body of statistics, describing the production in kind in both countries. This production ought to have been estimated in equivalent prices and then a more or less correct result would have been obtained, though, of course, it is impossible to obtain absolutely precise figures, since the structure of production, prices and the purchasing power of the rouble and the dollar are far from the same in various branches. Soviet statistics calculated in monetary terms do not suit American economists; they believe to be correct only data on production in kind. They will do well to know, however, that the relations in the levels of industrial production in individual branches differ so widely, that it is difficult to draw any inference on the levels of industrial production in the two countries on the basis of these data alone. Thus, coal output reached 463 million tons in the U.S.S.R. and 467 million tons in the U.S.A. in 1957. The output of electric energy in the U.S.S.R. in 1957 was 30 per cent of that of the U.S.A., while the production of combines was almost three times as great. The conclusion to be drawn from this is that the structure of industrial production in the U.S.S.R. sharply differs from its American counterpart. In some items, the U.S.S.R. falls behind the U.S.A., in others the levels coincide, and in still others the Soviet Union has long surpassed the United States in both the volume of production as a whole and in per-capita production (asbestos, manganese and chrome ores, nickel, electric locomotives, sugar, combines, etc).

Attack with Faulty Weapons

The bourgeois economists declare that the Soviet Union is developing its heavy industry at the expense of consumer goods. Proceeding from their false concepts, they "recommend" to the U.S.S.R. that it give up the priority growth of heavy industry and take a course for "calico industrialisation". The American economists Parker and Bark even declare that unless the Soviet Union departs from the general line of the C.P.S.U., aimed at the priority development of heavy industry, "discontent" of the population with such a policy will inevitably arise.

The U.S.S.R. has been treated to suchlike "advice" more than once. When the five-year plans were worked out before the war, the enemies of socialism of all vintages clung to the capitulators' idea of "calico" and "sweets" industrialisation, gleefully reiterating that if there were more mines, pits and power stations, there would be less foodstuffs and clothes.

The Soviet Union, of course, ignored the "advice" of the apologists of the bourgeois system, but followed the road pointed out by V. I. Lenin and the Communist Party. In the first stage of industrialisation, the Soviet country developed heavy industry at an accelarated pace to put an end to the technical and economic backwardness inherited from the past. During the First Five-Year Plan period the pace of its growth was two and a half times as great as the pace of the branches producing consumer goods. Then the gap between the two paces began to narrow, and at present it does not exceed 10 to 15 per cent. Besides, the very pace of the growth of our light industry considerably exceeds the average pace of development of the entire industry of the U.S.A.

It is important to note that the textile and food industries in the U.S.S.R., which are the backbone of the industries producing consumer goods, grow at a pace which is incomparably higher than that of the U.S.A. The following figures testify to this.

Pace of Growth in Textile and Food Industries

Country	Textile Industry		Food Industry	
	1957 in % to 1950	Average annual rate of growth in 1950-57	1957 in % to 1950	Average annual rate of growth in 1950-57
U.S.S.R.	199	10.3	192	9.8
U.S.A.	88	−1.5	108	1.2

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Our country's successes in raising the material standards of the Soviet people, gained on the basis of a mighty advance of all branches of economy, incontestably prove the advantages of socialism and blast to smithereens the fabrications of the bourgeois falsifiers.

In Defiance of Facts Astounding Mankind

The authors of the U.S. Congressional Committee's report endeavour to minimise the Soviet Union's scientific and technical achievements. They do not want to admit that in this respect, too, we are outpacing the most highly developed bourgeois countries.

They argue that there was supposedly fast scientific and technical progress in the U.S.S.R. only while the Russians "were taking over" the experience of the U.S.A., Britain, France and other leading capitalist countries. Now, however, the pace of scientific and technical progress in the U.S.S.R. is, they allege, bound to dwindle. Moreover, flying in the face of facts, the report claims that the Soviet Union's level of technical development in 1950-55 was close to the level the U.S.A. had reached a quarter of a century back.

Life has cruelly mocked such allegations. The construction of the world's biggest atomic power plants, automatic machine-tool lines and automated shops, the creation of the inter-continental ballistic rockets and the TU-104 and TU-114 jet airliners, the sending of the artificial Earth satellites into outer space, the successful launching of the space rocket towards the Moon, and many other things, all show that Soviet science and technology have gained world priority in very important fields.

Throwing logic to all four winds, the authors of the report themselves give a wealth of material refuting their own inventions, which allege that Soviet science and engineering are merely compilatory in character. They write that "in high energy physics the Russians are making appreciable progress and their experimental installations have been highly commended by Western scientists who visited the U.S.S.R." and that "the bulk of Soviet scientists . . . are conducting independent research of high quality on an increasing scale."

Continuing the finest traditions of Russian and world science, Soviet scientists have achieved signal results in different branches of knowledge. They are somewhere at the top of the table in the elaboration of theoretical problems of modern physics. We were first in Europe to start an atomic reactor and to make the biggest particle accelerator, the proton synchrophasotron. The Soviet Union began at one and the same time and independently of other countries to elaborate the theory of vacuum and semi-conductor devices and the theory and patterns of the programme control of machinery.

Russian, and later on Soviet, chemistry holds the priority for the elaboration of the theory of polymers and the industrial production of a key product of synthetic chemistry—rubber. The Soviet Union also holds priority in the creation and use of jet engines, which enabled aircraft to surmount the sound barrier.

Now man is entering upon the incipient stage of a new scientific and technical revolution, linked with the use of nuclear energy, electronics development, production automation, chemical technology, and the application of chemistry in economy. In all these spheres Soviet science and technology are boldly pioneering for all humanity.

Implement of Peaceful Labour

Modern technics are wholly based on science, which is the cardinal factor making for a high rate of increase and versatility in technical progress.

A key indication of the technical level of production is the electrification of economy, the rate of increase of power industry in general. In 1950-58 the average annual increase in the electricity output was about 12.4 per cent for the U.S.S.R., 9.6 per cent for the U.S.A., and between 7 and 8 per cent for Britain, France, and Japan.

The rapid growth of the power industry in the U.S.S.R. goes hand in hand with a rise in its technical standard. The construction of the dam of the Volga Lenin hydroelectric station on a foundation of sand and clay, not rock, is a novelty in world hydropower station building. This station has turbines with the world's biggest rotor in diameter and with an efficiency of 93.5 per cent. Furthermore, the network of electric transmission lines, which the station feeds, exceeds by more than a third the peak capacity in the U.S.A.

The U.S.S.R. was first to create such unique units for thermal electric stations as direct current boilers with high steam parameters. It is foremost in the level of automation and telemechanisation of big electric power stations. It is building the longest electric transmission lines, as, for example, a single grid linking up the power stations of the Urals, the Volga area, and the Central area.

The Soviet Union produces nearly every kind of machine, equipment, and instrument, and exports them in large quantities. The rate of increase in the U.S.S.R.'s engineering industry is much higher than that in the U.S.A. Whereas be-

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tween 1940 and 1956, we increased the output of the engineering and metalworking industries 5.3 times, the increase in the U.S.A. was only about 3-fold.

The results obtained through research in the Soviet Union are being successfully put to practical use. A striking instance is the use of atomic energy for peaceful purposes. Some thirty research organisations and twenty metallurgical plants, including the Kuznetsk and Magnitogorsk mills, the Azovstal, Zaporezhstal and Elektrostal steel plants, use radioactive isotopes for investigation and the control of technological processes.

All plans for the country's economic and cultural development are based on the latest scientific achievements, consequently, scientific work itself and the application of its results in production are planned on a countrywide scale.

Under capitalism, on the contrary, since there is private ownership of the means of production, the capitalists regard expenses for research and the use of technical novelties only as a source of profit. It is this yardstick which, along with militarisation, puts the limit to scientific and technical development and also directs the very trend of research.

Engineer or Travelling Salesman?

The U.S. Congressional Committee's claim that in both countries, "the number of engineers and natural scientists in the labour force is about the same," is debunked by the facts. The compilers of the report are breaking elementary rules of conscientious investigation. The figures for the U.S.S.R., which they gleaned from the statistical handbook "Economy of the U.S.S.R.," indicate the number of specialists with a higher education employed in economy. The figures for the U.S.A., however, give all the specialists with a higher education, whether they work or not.

The actual role of specialists in scientific and technical development is characterised by how they use their knowledge in practice. Therefore, in making comparisons, one must necessarily proceed precisely from the number of specialists employed in economy. In 1956, for instance, Soviet economy employed 721,000 engineers. The figure for the U.S.A. was 400,000.

In 1929-57 the number of engineers in the U.S.S.R. has increased more than seventeen-fold. In the U.S.A., the number has increased only five-fold in the last fifty years. According to the information of the Sub-committee on Economic Stabilisation of the U.S. Congress' Joint Economic Committee, in 1956 the U.S.A. trained less than a thirtieth of the technicians the U.S.S.R. trained.

A sober evaluation of the real state of affairs does not suit the authors of the report. They are inclined to explain away the insufficiency of engineers and technicians as being due to quite different reasons. They claim that in the U.S.A. "far broader aims" are supposedly associated with higher education than in the Soviet Union. The report says:

> "In the U.S.S.R., higher education is an instrument in the hands of the state for considerably augmenting the country's economic potentials. Consequently, Soviet higher school graduates are obliged to work in the profession they have chosen, which in most cases is directly linked with production. In the U.S.A., on the other hand, higher education pursues broad aims. There the graduate may work in the profession he has chosen. But it can also be simply the continuation of a secondary education with the aim of enlarging mental horizons and without having the graduate work later in the profession. Many secretaries and housewives, for instance, have received a college education. Others, after completing college, work as travelling salesmen or are occupied in fields not directly associated with their profession."

Indeed, in the U.S.S.R. education is a powerful factor for stimulating socialist economy. The higher the working people's cultural and technical standards are, the greater the wealth society creates, and hence the higher the material and cultural standards of the peoples become. Therefore, the task of the Soviet institutions of higher learning is precisely to train specialists for economy. Indeed, is it expedient that the American engineer, upon the completion of a higher technical educational establishment, begins to work as a travelling salesman? Is that really the sort of "career" for a specialist with a higher education?

Every Soviet higher school graduate immediately receives employment. This is not so in the U.S.A. Evidently, the authors of the report needed the idea of "the wider aims" of higher education in the U.S.A. precisely to explain why only a little more than half the American higher school graduates are employed in the economy!

What can the capitalist world and, specifically, the chief country of the imperialist camp, the United States of America, counterpose to the majestic results and perspectives of the economic development of the Soviet Union and the People's Democracies?

The higher rate of Soviet industrial development and the ever-increasing absolute growth of output of the major products associated with this development, result in the gap between the U.S.S.R. and the United States being constantly diminished. With industrial output in the U.S.S.R.

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increasing by 80 per cent under the Seven-Year Plan, in 1965 it will stand at about 95 to 99 per cent of the present American level, and in the next few years will surpass that level.

Calculations show that in 1970 (or earlier, if one takes into account the overfulfilment of economic plans which in our conditions is a usual thing) the Soviet Union will produce 18 to 20 per cent more industrial goods than the United States. This means that our country will catch up with the United States in per-capita production, for the population of the U.S.S.R. is approximately 18 to 20 per cent larger than that of the United States.

In 1965, as a result of the fulfilment of the Seven-Year Plan by the U.S.S.R., and the economic development plans of the People's Democracies, the socialist system will account not for a third of the world output, as now, but for more than a half.

Capitalism is compelled to retreat on the industrial map of the world more than on the geographical map. Occupying a quarter of the territory of our planet and having a little more than a third of the world's population, the socialist states will already in seven years outstrip the capitalist countries in industrial production. Under the pressure of facts, U.S. Senator Knowland was compelled to admit that "in the long struggle for power the balance of the scales are, obviously, tipping towards the Russians."

Today one can already clearly see the definite time when the main economic task of the U.S.S.R. will be accomplished. Fulfilment of the Seven-Year Plan will bring near and make attainable the higher and long-awaited stage of social progress when, as Marx said, together with the all-sided development of individuals, the productive forces also will grow, and all the sources of social wealth will flow more abundantly, and when on this basis society will be able to inscribe on its banner: "From each according to his ability, to each according to his needs!"

More on the nature of music

Jack Dunman

IF music is "the food of love" it can also be the material for fierce controversy. Thomas Russell in his article on "The Nature of Music" aimed at posing questions rather than drawing conclusions, and perhaps the time has now come to try and answer some of the questions; not at all because the answers are likely to be final ones, but rather to provoke that clash of opinions from which deeper understanding can arise.

No two arts have exactly parallel characteristics. Music has a special interest because it has so profound an effect on human emotions, because it appeals to so many people, and because it includes in its range works which have a direct and obvious connection with life and experience, such as songs of work and struggle; while at the other end of the scale are works widely recognised as among music's greatest achievements, which have no such obvious connections, and are seemingly among the most abstract forms of art.

The application of Marxism to music is of value in itself, and assists in the study of all the other arts.

This problem of the connection of music with life and experience is the first and most fundamental. Comrade Russell takes to task a correspondent who wrote ". . . Beethoven's Ninth Symphony is far more important to us than his Fifth, because of its uniquely moving and profound ideas on the brotherhood of man." This is described as "an obvious confusion between words and music".

Maybe the idea could have been better expressed, but I am inclined to think the anonymous correspondent has glimpsed something fundamental in the "nature of music" which Russell missed. It is a confusion to be probed, and not run away from.

Some musical forms involve words, and some do not, but most orthodox music lovers would not claim that words confer a higher status. According to their taste, they would point to the forty-eight Preludes and Fugues of Bach, the first eight Symphonies of Beethoven, the piano music of Chopin, or more recent examples, as among music's finest flowers; and however much we hanker after political, social, or even just human. significance in our favourite works, we can't but agree with them.

Does this not mean that we must begin by recognising that sounds and patterns of sound have emotional effects on the human brain? This is

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obvious, but often forgotten. It is a very material fact of human experience, and it is the opposite of idealism. It rather seems to me that it is a sounder basis for the approach to music than the historical one which seeks to establish it as an activity which helped primitive man in his labour. As Russell says, quoting Professor George Thomson, "music arose in the response to the demands of everyday life". I do not question the archaeological correctness of this, but I do feel that it can be stressed too strongly. It pushes into the background the complex and profound emotional effects of music which have developed during subsequent history; and it is inclined to give aid and comfort to those who demand, wrongly as I think, a utilitarian purpose in every composition. The same approach might be fruitful in the study of painting and design; but this will have to wait. How it happens will be better understood when more work on Pavlovian lines has been done on the physical working of the brain. In the meantime, present deficiencies of knowledge do not mean that such an approach "smuggles in" idealism.

Russell uses as an example a woman singing to her child to send it to sleep; but he curiously seems to ignore half the process. The woman—the performer—has a very practical reason for artistic creation—but what about the child—the audience, the responder to the artistic stimulus? Surely, the effect on him is a purely physical and material one—the rhythm, the tone, the melody, but by no means necessarily the words, which may be entirely absent—send him to sleep.

It is further a matter of common, and 100 per cent material, experience, that these effects of music on the human brain can be extraordinarily profound, bring physical tears, or almost uncontrollable exultation; and link up in some still unknown, but perfectly materialist way, with many of the emotions—joy, sorrow, fear, love—which are also caused by many other human experiences. Some of these effects may indeed be reinforced or greatly modified by association, memory, inherited characteristics. They vary in different civilisations; and we shall one day have to study the differences between the music of Europe and Asia and their emotional effects; for example whether major and minor chords have the same association with joy and sorrow which they do for Europeans. But I do not think it can be denied that especially as regards rhythm, the basic response is common.

But the effects are intensified in other ways than by association of ideas. First and foremost, music has an intellectual appeal as well as an emotional one.

In the course of history, the patterns and forms of music have become fantastically complicated, but yet related to the physical laws of sound, and to man-made conventions of form connected with them. The working out of forms in accordance with these laws and conventions, however artificial the man-made part of them may become, causes intellectual stimulation; and the intellectual and emotional stimulation react upon each other.

And finally music, like the Theatre alone among the other arts, has to be recreated by an interpreter. We recognise that the interpretation can enormously influence both the physical quality of the sound we hear and the emotional results of the work originally conceived by the composer. Our recognition of the skill of the interpreter itself produces an emotional response, especially after study and experience, including admiration for difficulties overcome. This is surely related to response to the performance of a fine athlete, but more important precisely because it is connected with deeper and stronger emotions.

Now here are a formidable number of reasons for the tremendous impact of music, without a single speculation about its "meaning", or even its relation to the social system in which it originated.

Independence from the Social System

In fact, they establish some degree of independence from the social system, because certain emotions such as joy and sorrow, to name the simplest, are common to men of different social systems. It is possible in the twentieth century to respond very deeply to the love poetry in the Song of Songs, to say nothing of that of less remote periods, and men in capitalist and socialist systems can recognise and respond to the music of joy and sorrow and love of previous and different social epochs. This applies to basic response; there are also differences, important but nevertheless secondary. Russell makes this point himself towards the end of the article: the important thing for us is to realise that it is not a mystery, running in some way counter to our philosophy, but arises naturally from the material basis of music and of human emotions. Stalin was, I think, dealing with this problem by means of a particular example in his famous article on Linguistics, in which he asked people to understand that certain activities are common to different periods and to different social classes. Does not this apply to some of the most important human emotions?

But to get back to the Choral Symphony. Music can exist without words; and wordless music can be among the most complex, and most

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effective, in the broadest sense of that word. Yet, through its history, an important part of music has been mixed up with words, from the simple work and folk songs to the vast complexity of opera.

I see nothing unreasonable in believing that the greatest emotional effect can be, indeed is likely to be, achieved by the successful marriage of beautiful or important words with the finest music; and I rather think it could be shown that the composers who we regard as the greatest have always demonstrated in practice that they believed it too, whether by writing operas, masses, passions, or songs.

Musicologists might examine the problem of whether the whole of modern music from Monteverdi on (which, including the purely instrumental works of the classical school, is based on the development of a single melodic line) did not triumph over the old polyphonic school precisely because the more elaborate the polyphony, the less chance had the words of being understood or even heard. This change in music can thus be seen as an element of the triumph of Humanism associated with the Renaissance and what followed.

Music and Socialism

In the Choral Symphony, Beethoven at the height of his powers, on the threshold of the last period in which the intensity of feeling is almost frightening, breaks away from his previous practice, and introduces words into the final movement of a symphony, which already exceeded in scale and depth all its predecessors. He chooses words expressing the most enlightened political aspirations which were possible at that time, and he even adds to them words of his own, "Be embraced, ye millions", which shows that, like some others of the world's supreme geniuses, he was able to comprehend a possible future which we now scientifically know as within mankind's grasp—on the basis of communism.

If the music which he composed is equal to the theme and there are enough who think it so—have we not indeed a work whose appeal is "unique"; and to socialists above all, because it expresses in music, and expresses adequately and marvellously, their own best understanding and aspirations?

There are few other works which reach so high: *The Magic Flute* is one; that "hotch potch of nonsense" as the orthodox critics would have it, in which Mozart had the same prophetic comprehension of a better order of society. Perhaps if we could hear more often Alan Bush's setting of those masterpieces of English political prophecy, in *Voices of the Prophets*, we should include them too. In spite of the fact that some of his work is tinged with pessimism, which although it arises from awareness of the miserable state of the world under capitalism, is not completely congenial to Communists, and of which Beethoven and Mozart knew nothing, Vaughan Williams also achieved it in a number of works.

Music and Humanism

But the fact that such works are few must not lead on to the fatal error of narrowing our taste or of causing us to demand that every masterpiece should have political significance. This error, though not now so apparent as it once was, still lingers on and bedevils much of our thinking.

The truth is simple enough: we Communists are not only the makers of a new society, we are the heirs of all that is best in the achievements of all previous ones. And achievements which help us to understand human existence—which is emotional as well as rational—and to glorify the potentialities of man, belong in a very real sense also especially to us, because we are working to end the degradation of man, and to enable him to rise to his full stature.

How splendidly this was expressed by Haydn in *The Creation*:

> "In native worth and honour clad,
> With beauty, courage, strength, adorn'd,
> Erect, with front serene, he stands
> A man, the lord and king of nature all,
> His large and arched brow sublime,
> Of wisdom deep declares the seat!"

And he found the music to express it, even if later in the same number concessions had to be made to sentiment and mysticism.

And if socialist ideas in music at this stage of history are found only rarely, humanist ideas—and there is no sharp dividing line—are found everywhere, far more widely than we think. One of the functions of Marxist musical criticism is precisely to extend this understanding.

A correspondent criticised an article in a previous *Daily Worker* for saying that Puccini's operas dealt with "women who loved too much" but omitting to say that this caused them to suffer because of national opression (*Tosca*), imperialism (*Butterfly*) and neglect of the artist in bourgeois society (*La Bohème*). Maybe; but this type of analysis is not the most important, and if it takes the place of the more important, it is even harmful. Humanism is not found only in those works which have direct political references.

Again Haydn's *Creation* comes to mind. At first sight a simple and attractive religious work, around a somewhat mannered, but quaint and

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pleasing poem, about the biblical story of the Creation—what else? A triumphant use of all, and more than all, the resources of the early classical period (which had broken away from polyphony) by the first great master of that period, glorifying the wonders of nature, in a way which had never been done or attempted before, and which makes even Handel seem a little narrow. And significantly enough, fine though the choruses are it is in the recitatives, the single vocal line, that Haydn reaches the greatest heights; the "catalogue" of animals; the astounding musical description of the sun and moon on their different journeys through the heavens:

> "In splendour bright is rising now the sun,
> And darts his rays; a joyful happy spouse.
> A giant proud and glad
> To run his measured course.
> With softer beams and milder light,
> Steps on the silver moon through silent night."

And, in the beginning, the creation of light, understanding of nature and appreciation of its beauties, was an essential element in the advance of humanism in the eighteenth century. Scientists who understand music must surely love *The Creation*.

Understanding these basic things, endearing details—such as the fact that this work was at first banned from Catholic churches because it persistently referred to God as a "worker"—a masonic idea—can be all the better appreciated.

Music and Religion

The Creation's connection with religion is very flimsy—what of works much more deeply connected—compromised, some would say? Most of us are inhibited to some extent in dealing with "religious" works because we disagree with the philosophical basis of religion and because of our knowledge of its historical role. Yet we realise how much of the world's artistic heritage we should lose if art with religious connections were ruled out, in music as much as in painting.

The truth we have to grasp—and grasp without inhibition—is that historical reasons caused man's mental development in many directions to take a religious form, as is well understood in relation to political theories, in a period such as the English Revolution. It was equally true of painting and music, and in music it lasted much later, well into the nineteenth century. Even Berlioz and Verdi wrote Requiems, and in dealing with the strange old Latin poem about judgment and eternal fire, succeeded in some still mysterious way in deepening our human understanding.

Religion was for several centuries the chief material for man's speculation and thoughts, and dictated the forms in which progressive thought developed, Humanism included. Thus, even a composer as much of the present as Vaughan Williams composed a work not only Humanist, but also social and almost political, within the framework of *Pilgrim's Progress*—a work which will one day be regarded as among the glories of English music, but which the critics, because of their understanding of its nature, have practically banned.

And thus it is possible for us to understand and appreciate the music of earlier periods, when religion was much more real both to society and to its composers. It may have been the influence of Humanism which made the great composers of masses from Palestrina right down to Beethoven, focus particular attention on references to the Christian idea of the incarnation, attempting to reconcile Humanism and religion. And even in the masses, there are more directly social references, such as that of Beethoven to contemporary war in the "Dona nobis pacem" (Give us Peace) in his Mass, which is one of music's great experiences, and one again which has a particular and vital appeal to Socialists.

Easier to understand because entirely outside the religious field, and in mind because of its splendid current production at Covent Garden is Handel's opera-oratorio, *Samson*. Here we have, concentrated in action covering less than twelve hours, the conflict between a captive people and their oppressors; a most subtle and detailed account of the hero's (Samson) psychological progress from demoralisation and despair to heroic and successful action, and concluding with the finest of all funeral music turning into a blazing song of triumph of the liberated people. Handel was not a Socialist; he could hardly be in 1747, and anyhow it was not his business. But is there much lacking here for overwhelming appeal to Socialists of the present day?

Let us, therefore, avoid every tendency to limit the scope of music which has some relation to the fight for humanity's future but rather widen it in every direction.

Music without Words

This we have done so far in relation to music with words. How does it apply to wordless music? How is it that certain works without words and without meaning expressible in words, command our minds and hearts and feelings in the way they do; for me, for example, the late quartets of Beethoven, and for others, other works?

The explanation is not in the existence of "programmes" of any kind. By "programme" I do not mean to indicate the *Sorcerer's Apprentice*

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type of music, where an attempt is made to imitate happenings or stories by reproducing as nearly as possible on the orchestra the actual literal sounds associated with them. Such are harmless enough and amusing; but they do not make great music. The bird songs in Beethoven's "Pastoral" Symphony are a very small and unimportant feature, and even the impressive storm is not fundamental to the work.

There is "programme" music of another and more subtle kind. J. W. N. Sullivan, in a sympathetic and stimulating book on Beethoven, links the structure and spirit of the symphonies—especially the Third and Fifth—with Beethoven's life—the first movement bitter struggle with his deafness; the second, sorrow and attempted consolation; the third, a new burst of energy at the realisation of the continuance of life and music; and the fourth a song of triumph after successful struggle to overcome his deafness. This analysis is convincing to me; how far the composer may have been conscious of the pattern is not very relevant. But one does not feel it applies to the Posthumous Quartets, which seem to cover a wider range of feeling which cannot be fitted into any scheme capable of description in words.

Nor am I very happy at the idea that the key is to be found, as Russell suggests, in comparing the music set to words of tragic or other significance in vocal works with similar phrases and harmonies in instrumental works. Such a study would be of value and interest indeed, but the effect of music on the human brain is more complex and more direct. And here, I am afraid this problem must be left, a problem about which we do not yet know enough to elucidate in words. The overwhelming effect of some musical works upon the mind and heart is at the same time a problem and a fact of artistic experience.

Readers may criticise me for leaving aside folk music and popular music. Folk music has been adequately dealt with by Katherine Thomson and I agree with all she says. I wish the theoretical contribution to this subject of our own Vaughan Williams, especially *National Music,* were more widely known; in it he said more than all that was said by Zhdanov on the subject of national music and folk music, in a persuasive and enthusiastic way to which all music lovers would respond.

With regard to popular music, the answer is that it *cannot* be written about like this, and this fact says a great deal about its nature. Its function, and there is nothing wrong in this, is to excite; it hardly touches the intellect or deep emotions, and it is therefore ephemeral. No one remembers last year's favourites.

Conclusion

And finally, what do we gain from an article such as this, and the discussion of which it is a part?

This is not the time, and writers in other fields of culture may feel the same, when we have some striking new truths to reveal, some entirely new attitude to develop. We discovered long ago that the arts are closely interwoven with human life, and this with the struggle to make life better, the struggle for socialism. Most of the work which we have done is sound, and needs mainly elaborating and developing.

Yet we do make discoveries in discussions such as this which are of value and importance, and which help us in our work; the knowledge and understanding that the things which all of us to some extent enjoy and cannot do without, are not a diversion (although of course they can become so) but part of the flowering of human life, the frustration of which we are trying to stop. We can listen to our best-loved works and not be worried that they are not all "Marches to the barricades", and do not all even give us powerful doses of heroic enthusiasm. If they enlarge our human understanding, and do not glorify reaction and pessimism, they will nevertheless make us better fighters for socialism.

Our composers will find it easier to provide the masterpieces with a direct impact on the class struggle if they do not feel every work must be of that character.

Does this mean some relaxation in our attitude to these questions compared with the missionary zeal of some years back? I think it does, and I think the present triumphs of socialism throughout the world justify such relaxation. Let me leave you with some less known verses of William Morris, which argue with a poet's genius.

> Lo, when we wade the tangled wood,
> In haste and hurry to be there,
> Nought seem its leaves and blossoms good,
> For all that they be fashioned fair.
>
> But looking up, at last we see
> The glimmer of the open light,
> From o'er the place where we would be:
> Then grow the very brambles bright.
>
> So now, amidst our day of strife,
> With many a matter glad we play
> When once we see the light of life
> Gleam through the tangle of to-day.

("Drawing near the Light", *Poems by the Way,* 1891).

If he in 1891 could see "the glimmer of the open light", how much more should we?

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Discussion on:

The question of nationality

I WAS very glad to see in this month's issue of *Marxism Today* an article on the highly topical question of national independence and the existing colonial frontiers in Africa.

Professor Potekhin in his article uses Stalin's definition of a nation—common territory, language, culture and *economic market*—as the basis for his study of the development of the peoples of Africa. He concludes that there are no African nations yet, although the most advanced peoples are in the process of forming themselves into nations, because they have not yet reached the stage of capitalism, i.e. there is no unique economic market. He examines in detail the factor in the struggle for African independence, which particularly interests B. R. Mann, namely, that the colonial powers have arrested the ethnic and economic development of the African peoples into nations.

B. R. Mann, on the other hand, either does not accept Stalin's definition of a nation—in which case she ought to say so—or else she has made an incorrect assessment of the historical stage of development of the peoples of Africa, since she freely assumes the existence of African nations and talks of national languages and national economies. (Admittedly the use of the words "national independence" in the African context is somewhat misleading.) In fact, of course, she has made the bad mistake of confusing historically-constituted communities with fully-developed capitalist nations. This is inadmissible.

She has observed correctly that the assumption that each colonial territory would develop within the existing boundaries into an African state instead of a European colonial state has in recent years been challenged, and, in my opinion, decisively so by the proposed union of Ghana and Guinea.

She foresees two possible developments in the political pattern of Africa; one, the breaking-down of large colonial territories into separate ethnic groups, e.g. the Ibo, Yoruba and Hausa peoples of Nigeria; two, the unification of ethnic groups arbitrarily divided by colonial frontiers, e.g. the Ewe people of Ghana and French Togoland or the Somalis in East Africa divided among five administrations.

Of course, these ethnic groups must, in the future, enjoy the rights of a united community, but this does not mean that they will necessarily develop as nations. The Ewe people, for example, number in all 800,000 and it seems unlikely that they could ever be a strong, prosperous nation. Many such communities in the Soviet Union today have a common territory, language and culture, but they are part of a larger nation. The determining factor in Africa as elsewhere is the economic one: are these communities economically viable or should they join with other peoples to develop an internal economic market?

The struggle for complete independence of the colonial powers is concomitant with the struggle for nationhood. And it is quite ridiculous for B. R. Mann to pretend that Ghana independence has not yet opened up new possibilities in the solution of the national problem. Of course, independence within colonial frontiers is limited, but could the Gold Coast ever have contemplated union with Guinea, which is the starting point for the unity of West Africa? The main limitation on her independent status is due not to the fact that she has not changed her frontiers, but to the fact that her people have not yet realised the need to gain full economic independence from Britain.

Contrary to B. R. Mann's belief, the forms of political organisation are *not everywhere* dictated by the shape of the colonial boundaries. The political parties in French West and Equatorial Africa are organised on a federal and inter-federal basis and there is increasing co-operation in British East Africa which has lately shown itself in the formation of the Pan-African Freedom Movement of East and Central Africa. These political parties and movements are fighting, on different levels, for the closer cohesion of their neighbouring countries artificially divided by colonial frontiers, although so far they have not achieved the same measure of co-operation between French and English territories. As they achieve greater independence and ultimately full independence from the colonial regimes, they will constitute a strong force in Africa, and will eventually be able to regulate the ethnic frontiers within their federations.

I think that B. R. Mann is rather stuck with the "divide and rule" formula in her assessment of the Colonial Office's attitude to the Ashanti

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movement of secession. In view of the strong nationalist movement in the Gold Coast, the Colonial Office was obviously forced to concede Ghana independence, but it infinitely preferred a strong Ghana, where the United Africa Company could carry on its profitable business in fair tranquillity, to a country at war with itself. The Colonial Office, which is not slow in discerning popular trends, would be quite happy to see colonial territories unite, *if* she thought she could still control them. A big "if", but her new approach can be seen in her attitude to the Ghana-Guinea union, whatever the truth of the rumours about Britain's action at the time may be. The main factor which perpetuates the *division* of the peoples of Africa is the inter-imperialist rivalries, which make each colonial power hold on to what it has got, regardless of the aspirations of the peoples of Africa.

These are my main criticisms of B. R. Mann's article. However I have some lesser ones.

I feel that the part of the article beginning "Afro-Asian Independence Struggle", which continues down to the last three paragraphs of the whole article is largely irrelevant to the theoretical discussion, although it would merit consideration as a separate article on African history with a review of Sir Harry Johnston's biography. Having said this, I suppose I should refrain from further comment, since it seems a fair piece of descriptive reporting on the emergence of Africa into the world cultural and historical scene. However, I can't help but express my surprise at hearing that "the rapid progress of industrialisation, science and technology . . . was made possible largely by the capital accumulated in the slave trade"!

I think it is unfortunate to begin such a topical and theoretical article with an irrelevant quotation, which sets a tone of academic remoteness.

Two minor points of fact: it is optimistic to say that "there is today no African territory without a political emancipation movement so strong as to command attention". What about the Portuguese territories? Finally, the French Union ceased to exist on September 28th, 1958—it is now, of course, the Community; and what does this mean, "Even the small French colony (of Somaliland), in spite of threats (now carried out) voted against de Gaulle's constitution in the same strength as Algeria"?

Jenifer M. Warren.

Discussion on "Whither Trade Unionism"

The principle and practice of amalgamation

*Jim Gardner**

THERE are three things every active trade unionist knows: 1. that improvements in wages or conditions do not come as a gift from the employers; 2. that since the trade unions are the workers' creation for obtaining such improvements, they need to be as strong as possible; 3. that however strong the union, it can only give the service for which the members have built it and for which they maintain it if their needs are speedily and accurately expressed in the administration and leadership. Perhaps the experience of the foundry trade unions is not without interest in this connection.

*(Mr. Jim Gardner was General Secretary of the Amalgamated Union of Foundry Workers from 1944 till his retirement in September 1958.)

Founding is concerned with the art of making metal castings, as components for all kinds of machinery or as an end product for building construction or domestic use. It is basic to, and a part of, the engineering industries. The hazards of the work are severe and considerable, though varying with the type of foundry and of casting produced. Some of the hard physical labour of traditional foundry practice has been lightened by the use of mechanical aids and the mechanisation of certain processes; but much of it remains, giving rise to physical strain and the ills resulting from it. Conditions generally have improved in recent years, as a result of union effort, and the old type of foundry described by Tom Bell in *Pioneering Days* as "vile, filthy and insanitary" is less typical

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than it was. Bell's description of the old type of foundry is still valid, however: the approach resembling "that of a rag and bone shop"; the entrance "usually strewn with all kinds of scrap and rubbish"; and the inside where "smoke would make the eyes water and the nose and throat would clog with dust". The dangers from dust and fume, from molten metal splash, moving objects and a variety of other causes, although now more effectively under control, continue to blight the lives of foundry workers.

For this reason foundry workers were, and still are, rightly concerned, not only with obtaining a wage consistent with the skill and importance of their work, but also with securing reasonable protection against accident, illness and premature death.

Trade union organisation in the foundry trades began 150 years ago, and has continued unbroken up to the present time. A history of this century and a half of foundry trade unionism is in course of preparation by the Amalgamated Union of Foundry Workers. In this article, therefore, we shall only glance at more recent developments.

The National Union of Foundry Workers

The amalgamation, in 1920, of the Associated Ironmoulders of Scotland with the Friendly Society of Iron Founders and the Amalgamated Society of Coremakers constituted the National Union of Foundry Workers, with a membership of over 50,000. Structurally this amalgamation began in the shop, as in the Associated Ironmoulders of Scotland, membership in a branch being decided by place of employment and not of residence, so that all members in any one shop were in the same branch. Based on the shop in this way, where trade union democracy must begin if it is to be effective, the amalgamation provided the means for co-ordinating shop administration and activity through branches, which in turn were able to co-ordinate their efforts and influence on union policy in a wider sphere through district and divisional committees; while policy decisions were the prerogative of the elected full-time National Executive Council.

Since, however, the amalgamation was preceded by the twenty-week strike of the Friendly Society of Ironfounders and the Amalgamated Society of Coremakers, the amalgamated union was beset by financial difficulties from the outset, with a considerable debt which took twenty years to clear. Faced with severe recession in trade, and immediately affected by the miners' dispute in 1921, followed by the engineering managerial functions dispute in 1922, and the General Strike and miners' lockout in 1926, the union faced chronic financial crisis, with every single asset held by the bank as security for overdraft. Recurring crises could not but weaken the union's effectiveness. hampering it not only in its endeavours to improve the lot of foundrymen, but even in its defence of their hard-won gains of earlier years.

Beset with such difficulties, the N.E.C. effected economies both by reducing benefits and by curtailing administration costs, including first the suspension and later the abolition of district and divisional committees, although a voluntary association of branches in a district committee was still permissible with the consent of the N.E.C.

In the early part of the Second World War, members, revolted by the deterioration in their conditions, were seeking stronger means of expressing and enforcing their demands for improvements—which naturally meant strengthening first of all their own trade union, and giving it a more effective structure and policy which should truly correspond to their needs.

Democratic Reconstruction

A great deal of earnest discussion went on among the active members, prominent among them Jock McBain, the big, fearless Scottish Organiser and secretary of the Scottish District Committee. The ideas emerging from all these discussions were incorporated in a memorandum (which Jock, unhappily, did not live to see), recommending the reconstruction of the union on more democratic lines. This memorandum was then circulated by the District Committee for discussion in the Scottish branches, and to the district committees which had been voluntarily constituted south of the border. Subsequently it was finalised at an unofficial conference in York in 1941, composed of representatives of the then existing district committees; after which it was published, on the authority of those committees, as a pamphlet, copies being sent to every branch of the union.

In brief it called for a constitution and rules that would facilitate the transmission of ideas from the foundry to the branch meeting, then by branch representative to the district committee, and finally by district committee representatives to a national policy-making conference called by the National Executive Council—the decisions of this conference to be the policy of the union.

This proposed new structure would not only restore the democratic framework of the 1920 amalgamation, but would improve on it, since it offered provision whereby the democracy of the shop floor could find expression through a series of direct links with the National Conference, where rank and file delegates, and not a full-time N.E.C., would decide the union's policy. Since

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this constituted a challenge to Executive authority in the determination of policy, it had to be fought for, within the requirements of the rule book.

The National Council was required by the union rules, on the request of thirty branches, to test the views of the members. In fact many more than thirty branches requested this. In response the National Council first convened an official conference of representatives of the voluntarily-constituted district committees, to get agreement on the formulation of the reconstruction proposals for ballot purposes, and then submitted these to a ballot vote of the members. The entire scheme received overwhelming support, and was finally incorporated in the union's constitution. As was to be proved by events the influence and stature of the union were increased thereby as well as its responsiveness to the needs of the members.

A Forward-Looking Programme

Concurrently with these developments other discussions were in progress. If reconstruction was to mean more than a mere alteration to rules, there must be a forward-looking *programme,* conforming to the aspirations which prompted the whole movement for a stronger trade union. Such a programme was provided in two pamphlets. The first, *Searchlight on the Foundry,* published by the Stirlingshire district of the Communist Party, was produced following many discussions in which active workers in the Falkirk foundries took part. Expressing the ideas which came out of these discussions, it made a searching examination of foundry standards and conditions, and made proposals on policy whereby improvements could be effected and trade union organisation strengthened. This pamphlet deeply interested the members of the District Committee, and was so widely discussed in the union branches that it was next agreed that the District Committee itself should issue a further pamphlet. The draft of this was closely examined by the whole committee, additional ideas and suggestions included, and it was published under the title of *The Foundry and the Foundry Worker.* The two pamphlets provided policy statements to which the reconstructed union could and did devote its attention. Later achievements testify to the accuracy with which they reflected the mood and aspiration of the members.

Whilst all this was proceeding, the Scottish District Committee began itself to give effect to one aspect of the programme, by initiating talks on amalgamation with the Scottish Brassmoulders and the Scottish Dressers, of which the secretaries were James Lee and James Finegan respectively. The result was a definite scheme for amalgamation, which was given final form at a joint meeting of the Scottish District Committee of the N.U.F.W. and the E.C.s of the other two unions. It was then sent to the E.C. of the N.U.F.W. and an official conference was held of the three Executives, representatives of the Scottish District Committee of the N.U.F.W. being in attendance in acknowledgment of the spade-work done by it. The amalgamation became a fact in 1943.

(One Scottish foundry union, the Ironfounding Workers' Association, with its headquarters in Falkirk, did not, although invited, participate in these negotiations. An opportunity to remedy this came later, and resulted in the further amalgamation of 1946, by which the Ironfounding Workers' Association and the United Metal Founders' Society combined with the N.U.F.W. to form the A.U.F.W.)

During the war the considerable hazards of foundry employment were greatly increased by the black-out and other abnormal conditions. War demands required the most intense efforts of foundry workers, taking heavy toll in industrial disease and accident. Members of the union, and of other foundry unions, were insisting that attention be given to these hazards and the prevention of avoidable sacrifices, with such effect that in 1943 Sir Wilfred Garrett, H.M. Chief Inspector of Factories, set up an advisory committee on Dust in Steel Foundaries.

The Confederation

In 1944 the N.U.F.W. responded to the urge for closer unity with other unions by affiliating to the Confederation of Shipbuilding and Engineering Unions. In the following year one other proposal included in the programme of the Scottish District Committee was realised, by the setting up of a Foundry Committee bringing together all the unions in the Confederation which had members in the foundries. With all its weaknesses, this coming together of unions with a foundry membership within the larger confederation of shipbuilding and engineering unions proved to be an effective weapon in the period of full employment, when objective conditions were favourable to the securing of substantial improvements in foundry standards.

In the same year two briefs were prepared by the N.U.F.W.—one a reasoned case for increased wage allowances in consideration of the special skills and risks of foundry workers. This was presented to the employers by the Confederation's Foundry Committee; and the subsequent negotiations brought increased wages to every foundry worker. A later claim for an increase in the foundry allowances (or differentials) was the subject of successful arbitration proceedings, raising

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still further the level of wages for all foundry workers, who, of course, also participated in the general engineering increases won by the Confederation.

The second brief concentrated attention on conditions in iron foundries, which had been so scathingly condemned in the pamphlet of the Scottish District Committee. This document was presented to the first meeting of the Joint Advisory Committee on Conditions in Iron Foundries* set up by the then Chief Factory Inspector, Sir Wilfred Garrett, and of which his deputy, Mr. H. E. Chasteney, acted throughout as Chairman. It formed the basis for the ensuing discussions, and the Report (popularly known as the Garrett Report) which followed.

It was this Report which, in its turn, gave the basis for the Private Member's Bill prepared by the A.U.F.W. with the aid of its solicitors, and presented to Parliament by Miss Margaret Herbison, M.P. The Bill was designed to provide standards of protection against certain foundry hazards, and eventually withdrawn on the understanding that its provisions would be made the subject of new statutory regulations. The Iron and Steel Foundry Regulations 1953 followed, defining standards of good house-keeping, including storage and arrangement of equipment and specifications for gangways and pouring aisles. They also included an obligation to provide safeguards against dust and fumes, certain protective equipment, and ablution blocks with proper accommodation for clothes, in every iron and steel foundry.

In the following year the National Insurance Prescribed Diseases Regulations were amended, extending the Pneumoconiosis Regulation to give a complete cover to every foundry occupation, including non-ferrous foundries, for which a third Joint Standing Committee was later set up. All three Committees are still continuing their work, investigating old hazards and possible new ones resulting from new techniques, and devising means to overcome them.

As a result of all the pioneering work that had been put in, members became increasingly better informed, appreciating more clearly that many of the undesirable conditions prevailing in the industry were avoidable, and saw the way to remove them.

Most of the gains of the last fourteen years have been won when trade was booming. Now we are, it would appear, entering a period of slump. Trade unions have advanced before in times of boom, but have too often lost ground when slump set in. For foundrymen, this must raise anew the question as to whether the A.U.F.W. is strong enough, even with its allies in the Confederation, to defend itself against any attack and to make further advances. The attacks are already being made, as unemployment again raises its ugly head. This means that trade union organisation must be re-examined in the changing conditions now maturing. Every member has the right and duty to continue the thinking and the exchange of ideas which have made advances possible in the period since the war. As was said at the outset, these gains were no gift from the employer. They were the outcome of the conscious and combined effort of organised foundry workers. To strengthen the organisation, to continue giving it life, renewing the energy expended in winning our present standards—this alone will guarantee that we shall be able to defend all that has been gained and achieve the even higher standards that can and must be won.

* Consisting of representatives of the unions, the employers' associations and the Factory Department of the Ministry of Labour.

Trade Union Organisation

Something more needs to be said about trade union organisation—and here again perhaps foundry trade union experience is not irrevelant to the problems of other unions. Despite the amalgamations of 1920, 1943 and 1946, there are still a substantial number of foundry workers dispersed in other unions, six of which are small, with a primary interest in the founding or light casting industries. Of this six, with an aggregate membership of about 12,000, two have a substantial proportion of their members employed in occupations outside the foundry, and very little more than half the aggregate are in actual foundry employment.

Other and much larger unions, with a major interest in engineering, have a much greater number of foundry workers among their members. These include the A.E.U., the Transport and General Workers' Union, the General and Municipal Workers' Union and the Metal Mechanics, with all of whom some measure of co-ordination can only be obtained through the C.S.E.U. For the purpose of this article the other two large unions, namely, the British Iron and Steel Trades Association and the National Union of Railwaymen, need not be considered, since neither is in the Confederation, and their foundry members are employed only in foundries attached to enterprises within their own sphere of steel manufacture and railway shops respectively. This does, of course, represent an overlap, which must sooner or later receive attention. It affects many other unions in the Confederation of Shipbuilding

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and Engineering Unions, and is not a peculiar problem for the foundry unions.

Confederation is an alternative to, not a substitute for, amalgamation. It is not always true that a confederation moves as slowly as the most reactionary unions in it; but it is true that it moves as slowly or as fast as the most influential affiliate. In the C.S.E.U. that affiliate happens to be the A.E.U.

The A.E.U. has a foundry membership, but has been a passive member of the Confederation's Foundry Committee. It was the A.U.F.W. that provided the drive whereby advances in foundry standards have been made. On the wider engineering issues dealt with by the C.S.E.U. the A.E.U. has been the dominating partner. That is how democracy works in the C.S.E.U., and there can be no objection to it if democracy also works in the A.E.U. itself.

Amalgamations

Amalgamation is a serious issue which must be faced. But it is not merely a matter of merging forces and funds without regard to structure. Numbers are not everything; and indeed, if it results in the membership becoming inarticulate such a merger can be worse than the status quo. Considerations of amalgamation should include considerations of structure, so that different industrial interests are assured of a service as good as, and better than, was obtainable in conditions of separate existence. The cult of the individual is not a recent development, or one of Russian origin. It has not been absent from our own trade union and Labour movement, and examples will come readily to the mind of the reader.

No, it is not bigness we are looking for, although bigness is unavoidable if unity is to be obtained. A big combination can, however, have at the same time a standard of democracy which will prevent any individual or group from dominating the whole. Many workers see the big union as inseparable from bureaucracy, but it need not be so. Craft workers are also concerned that their particular interests should not be submerged: again, this need not happen. The menaces to craft and trade interests come particularly from technological changes, and trade union organisation needs to be strong enough for members to be assured of improved service in these circumstances.

All misgivings can be answered, and should be answered concretely, in a structural examination of existing engineering unions, so that any scheme for an amalgamation has due regard to the needs of our time. The A.E.U. was given the opportunity of making such an examination but did not take it. Proposals were presented by the A.U.F.W. to the A.E.U. some years ago, setting forth in outline a proposed structure whereby foundry interests could be given administrative attention in an amalgamation of engineering unions. Members of the A.U.F.W. will not be easily persuaded to surrender the basic democracy to which they have become accustomed, and which has served them well for so many years. Rather they will expect a strengthening of the shop basis of their organisation and of the link with workers in other departments at present effected through the confederation, retaining also the direct link through the branch and district with the policy-making national body. They are aware of the need for change, but for *progressive* change to higher forms of trade union organisation, that will offer an effective challenge to the powers of monopoly and help to bring into existence a new social order wherein production is developed for the advancement of all and not merely to profit the few.

The General Unions

Engineering unity is bedevilled, as unity is in other industries, more by the cross currents of competitive recruitment between the large labour unions than it is by the existence of a number of small unions or of different craft or trade interests. An engineering amalgamation would not solve this problem, although it might make it easier to find a solution.

The two large labour unions have each a substantial membership in the foundries and in engineering generally, creating divided loyalties, the overall effect of which is to weaken trade union organisation and reduce its effectiveness. The large labour unions themselves are weakened as much as others with whom they compete for membership. Amalgamation offers no solution to this problem, nor has the top leadership of the movement as a whole, dominated as it is by the big unions, shown the slightest inclination to face the problem, which is crying out for a solution.

That the members of every union would benefit if an agreed solution were found is undeniable. If for example the T.G.W.U. confined its activities to transport, docks, inland waterways and roads, and were assured of exclusive rights in this field of trade union recruitment, it would lose nothing and its members would gain. A less diversified administration must lead to greater efficiency and improved service to the members.

Similarly with the General and Municipal Workers' Union. An exclusive right of recruitment in the municipal services, perhaps including

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the gas industry, would not weaken it, but on the contrary would increase its stature and make it more effective. No one would lose, and the members generally would gain.

Both unions, by surrendering their engineering and other interests to an engineering amalgamation, or similar grouping, in industries in which their interests are minor to other unions (by agreement, of course), would give the trade union movement new life and the membership new hope. It would give new energy for the great tasks which face the trade unions, and provide a more efficient machine to take its part in the great struggles for a new order of society, in which social need is the motive force which inspires our people in their production efforts.

Are there people big enough in our movement to face this all-important task? If there aren't, the movement must produce them.

In this period of technological change trade union organisation is lagging seriously behind. This is not a problem to be dealt with by generalising. Many people agree in principle on the need for greater unity, while opposing practical proposals for specific trades or industries. The need is urgent, and growing more urgent, for amalgamation that will bring greater unity; and those who will not help in this should for shame hold their tongues about "principles".

Let it never be thought that old craft or bureaucratic conservatism is too strong to be overcome, either in the leadership or in the ranks. A clear-sighted and vigorous minority will win response to its initiative, if only the proposals which it urges answer to the needs of the membership. Someone has to start!

Reply to T.U. Discussion

Peter Kerrigan

SIX months ago Harry Pollitt in an important article in *Marxism Today* opened a discussion on the subject "Whither Trade Unionism?" Events during the intervening period and the contributions which have appeared underline both the importance of the subject and extent of the problem posed.

It would be presumptuous in this article to assume that we can now arrive at clear-cut final conclusions. Further consideration of the issues, taking into account most recent developments, and our practical experiences in striving to apply socialist principles in the trade union movement, is needed. Nevertheless, it is important to try and examine the whole question and draw some necessary lessons as a guide during the next phase.

The economic crisis has sharpened quite a lot since Comrade Pollitt wrote his article. The disastrous fall in production of steel and coal, with the proposed mass shut down of pits and the growing army of unemployed, is a grim fact. Along with this has gone a mounting offensive against the workers. In particular the trade unions have come in for special attention by the capitalist class and its Tory Government.

At the moment Comrade Pollitt's article was being written Tory lawyers were publishing proposals for legally shackling the trade unions. *The Economist* reviewing the 4s. booklet called it "A Bill For Trade Unions? Wanted, a Charter for would-be blacklegs". The proposals were given a general welcome in the capitalist press. There is no doubt the Tory Government is only waiting for an appropriate moment to endeavour to apply some of the proposals, which would hamstring strikes, encourage company and break-away unions, and make 100 per cent trade unionism and the closed shop impossible.

Two most revealing courts of enquiry have been held recently, both under Professor Jack. The first was into the nine weeks' strike at Smithfield Market and the other was on the stoppage by B.O.A.C. workers at London Airport. An outstanding feature was the attack on militant trade unionists, particular against shop steward and rank-and-file organisation. In the case of B.O.A.C. not only was the Communist bogy trotted out and a savage onslaught directed against the shop stewards but it was extended to embrace union officials in the Association of Supervisory Staffs, Electrical Trades Union and others. In fact the vice-chairman of the Labour Party was singled out for treatment.

It is worth noting, in view of what Comrade Pollitt said about the role of right-wing T.U. leaders, that Mr. Jim Matthews' line of opposition to the strike, and to the policy of most of the other T.U. officials, was upheld by the Court of Enquiry. At the same time the right-wing majority on the Amalgamated Engineering Union Executive issued a report on the situation in No. 25 Division of the union suspending one officer, censuring three others and sacking a woman typist. Reference

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is made in the report to the number of unofficial strikes in this division. There is no doubt where the right-wing leadership stand on the question of militant action to defend workers' interests.

What is probably one of the most significant and dangerous developments has been interference by newspapers, national and local, the radio and television, in the internal affairs of trade unions. Nowadays there is practically no election, either nationally or locally, that is not given "treatment" by the press and very often by radio and television.

A really vicious campaign was conducted in Coventry, Wolverhampton, Manchester and the national newspapers to ensure defeat for Les Ambrose in the No. 4 E.C. Division of the A.E.U. Similar campaigns were run in Sheffield, London, Glasgow and elsewhere both in local and national ballots.

The E.T.U. has been singled out for special attention with features on T.V. and sound radio as well. Failing to influence the rank and file as it wishes, the press and radio, with some help from inside, is trying to influence the T.U.C. General Council to take some action against the E.T.U. leadership.

Constant references have been made to the current election for president of the A.E.U., and now the miners are given the same concentration because the position of general secretary is to be filled by a pithead ballot. Invariably the interference is directed to defeat any candidate who stands for a militant policy and secure election of officials who stand for class collaboration.

Class Outlook and Policy

All this focuses on an important point raised in the article and subsequent discussion, namely the fight for a real class outlook and policy by trade unions, their members and leaders. Bill Paynter, Frank Stanley, Bill Warman, Jock Sherrif and Bert Pearce dealt with this from one or another aspect. I believe the importance of the ideological struggle has been underestimated by both Communists and militants in the unions.

It is a fact that despite generally very low attendances at union branch meetings, from time to time there takes place, under the impact of press, radio, television, church, and right-wing activities, a higher attendance when some ballots are conducted, and usually the votes cast are against militant nominees. These voters fail to realise that the candidates for whom they vote often stand for policies which are opposed to those supported by the members who vote for them.

How to change this? I think that absolutely insufficient use is made of the printed word. Of the *Daily Worker*, of pamphlets like Finlay Hart's *The Communists and the Trade Unions*, various pamphlets on mining, building, *Which Way for Socialists?*, *The British Road to Socialism*, and publications such as *World News*, *Marxism Today*, rank-and-file journals like the *Metal Worker*, *The New Builders' Leader*, *Country Standard* and, most important for young people, *Challenge*.

Alongside this goes the question of education. The whole purpose of the really extensive T.U.C. educational schemes, supplemented by similar ones run by various unions, is to convince members that the line of social democracy, class collaboration, speed-up, wage restraint, and so on, is the only possible policy for trade unionists. Only a very limited number of unions—like the South Wales Miners, the Electrical Trades Union and the Scottish Miners—run educational schemes based on real class consciousness and the true interests of their members.

It would be good if more unions changed the character of their educational schemes and put pressure on the T.U.C. to do likewise. Meantime, it behoves Communists and active militants to step up the number of classes they run based on Marxist teachings. Now there is a welcome increase in recruitment to the Communist Party, it is important to stress the need for starting at once educational classes for new members and extending present classes, taking into account the need to cater for active trade unionists. We should explore again the possibility of correspondence courses and give help and publicity to bodies like Marx House with its invaluable library. Above all we want more discussions on policy and its implications in the trade union branches and factories.

In connection with another aspect of the problem, namely the character of the trade union leadership, a few observations are not out of place. As the struggle sharpens on wages, hours, conditions, the fight for jobs and improved benefits, it should be possible to make a much wider approach to the question of unity and united action. Increasing numbers of workers are aware that this year over 1½ million less workers than last year got wage increases. The wage increases won were £3,230,000 per week compared with £5,175,000 in 1957. Comrade Pollitt said "there must be a clear understanding that higher wages and better conditions should be won wherever there is the slightest chance". I believe we can get this concept accepted by increasing numbers of trade union members, establish good relations and get concerted action with more and more militant trade unionists who will co-operate to change the policy and leadership of their unions in a proper way.

Before coming to the question of trade union organisation and structure there is something to be said on technical advances, and questions of demarcation. Automation is making progress in a

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variety of industries, including engineering, oil refining, chemicals, brewing, offices and banking. In this period of developing economic crisis these technical advances have been accompanied by displacement of labour, sometimes on a fairly large scale, and unemployment. A number of the unions take the correct viewpoint that there should be no sackings, displaced labour to be retained until it can be placed elsewhere at no reduction in wages, and with re-training at the firm's expense where necessary. This warrants full support by trade unionists.

Some of these changes have also exacerbated the demarcation problem. Comrade Pollitt was correct to pose it frankly. However, there has been a noticeable absence of comment from those taking part in the discussion. Yet it has to be faced. Unless the unions approach demarcation disputes with determination to settle them between one another we will have more and more examples of employers utilising the opportunity to play one set of workers off against the other. They invariably endeavour to get the cheapest labour to do the job irrespective of past practices.

In my view it is fatal to allow the bosses to be involved in negotiations between the unions concerned. Let the matter be settled by agreement and then the unions can present a united front to the employers. Of course a big step to making such settlements easier is to unite the workers concerned in one trade union. This brings me to the issue of trade union structure and amalgamation.

Trade Union Structure and Amalgamation

This certainly occupied the main attention of the contributions to the discussion. Frank Stanley, Jimmie Jarvie, Dave Bowman, A. H. Legge, Bill Warman and Jim Gardner all devoted considerable space to it and made valuable propositions.

It is well to remember that at the end of 1957 there were just 9,752,000 workers organised in trade unions, of whom in October 1958, 8,337,325 were in unions affiliated to the T.U.C. That is out of a total of about 23 million gainfully employed, anything up to 20 million are potentially organisable. There were 1,876,000 women in trade unions out of over 7½ million women in industry. Although the number of males in unions went up by 48,000 on the previous year, the number of women dropped by 8,000.

Of course as Socialists applying our principles to industrial organisation it is easy to declare our objective is one union for each industry. We, however, are living under capitalism, with a trade union movement which has grown historically in such a way as to present us with a whole variety of trade union forms of organisation. The main divisions are, roughly, industrial unions like the National Union of Mineworkers and the National Union of Railwaymen; there are general unions, such as the Transport and General Workers and the National Union of General and Municipal Workers; and craft unions, some of which—the Boilermakers, Woodworkers, Shipwrights and Sheet Metal Workers—are composed almost exclusively of skilled workers who have served an apprenticeship; and others, like the Amalgamated Engineering Union, organising craftsmen and apprentices, semi-skilled workers, unskilled workers and women.

At the end of 1957, according to the *Ministry of Labour Gazette*, there were 653 trade unions covering 9,752,000 members; 36 of these unions organised 7,875,000 workers, i.e. 5.5 per cent of the unions organised 81 per cent of the members; 183 of the trade unions, embracing 8,337,325 members, were affiliated to the T.U.C.

A number of unions affiliated to the T.U.C. are linked in confederations. The most important of these are the Confederation of Shipbuilding and Engineering Unions, the National Federation of Building Trades Operatives, the Printing and Kindred Trades, and the Cotton Textile Unions. Harry Pollitt spent some time on this question and came to the conclusion that the rise of various confederations is looked on as the end of trade union unity. That may be so on the part of some trade union leaders, but I would not agree it is the only approach. Jimmie Jarvie makes some very telling points on the issue of amalgamation in the Confederation of Shipbuilding and Engineering Unions. Some craft unions like the Blacksmiths and Coppersmiths are genuinely seeking amalgamation, and are prepared to make important concessions to achieve it.

I am not so sure this is the case with the Boilermakers, yet they ought to be the natural basis of a shipyard amalgamation. Again, the A.E.U., which is the obvious focal point for an engineering amalgamation, will require to make important concessions on autonomy and representation in all organs from top to bottom if it is to attract unions like the Vehicle Builders, National Union of Sheet Metal Workers, National Union of Foundry Workers, or important white-collar unions like the Association of Engineering and Shipbuilding Draughtsmen.

In the railway industry, despite its industrial structure, the N.U.R. does not organise all railway workers. The Associated Society of Locomotive Engineers and Firemen embraces the majority of the footplate staff and the Transport Salaried Staffs most of the clerical grades

Dave Bowman makes a number of important points here, with which I agree, but I think we need to stress, as immediately practicable, the idea of joint wages application, joint negotiations with

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the Railway Executive on conditions, and closer co-operation at job and depot level between all the unions concerned.

I would like to emphasise as basic to any progress on amalgamation, whether in building, engineering, print or cotton, the absolutely vital importance of co-operation and joint organisation at job level. Unless we achieve this we will fail to win the members for organisational unity. Our enemies realise it, hence the attacks on shop stewards' organisation from press, Government enquiries and Tory ministers. Hence, also, efforts by right-wing leaders and executives, including prominent members of the T.U.C. General Council and Executive of the Labour Party, to discipline and weaken shop steward and job organisation, particularly when it brings together representatives of different trade unions on a factory, job or district basis.

Comrade Legge has worked out a blueprint for the electricity supply industry and there is a strong case for one union with the E.T.U. as the obvious kernel. But if he has read Jarvie's article on the problem of the general unions in an engineering amalgamation he will appreciate it is going to be a big headache in supply. My advice would be to step up the campaign and assist it by developing the strongest job organisation and co-operation between the unions involved.

Comrade Pollitt is correct in drawing attention to the slowing down of the process of amalgamation over recent years. The present crisis in industry and the tasks facing the unions demand a new impetus to the campaign. Without trying to blueprint the form of further amalgamations it is worth bearing in mind some guiding lines of approach:

(1) Entry to unions to be speedy and simple.

(2) Branches where practicable should coincide with the place of work and be of manageable proportions.

(3) Shop stewards should be recognised as part of the trade union structure responsible for seeing agreements are fully observed. Workers on the job should have the right to elect and recall stewards subject to endorsement by appropriate union committees.

(4) Union branches should have the fullest possible democratic life. They should participate in all local Labour movement activity, having regular contact with shop stewards and union district committees.

(5) Branch and district committees to be elected annually, and all national E.C. and district and national full-time officials to be periodically elected.

(6) Resolutions from branches should be considered by appropriate higher committees. The supreme union authority to be embodied in an annual or biennial conference elected by members to determine union policy on the basis of resolutions from branches and district committees, the E.C.

(7) Full-time officers to be responsible for operating policy on the basis of union conference decisions, with agreements concluded only after consultation with the membership.

Union Branches

Frankly, I have got no cut-and-dried solution to the problem of trade union branch attendances.

If we operate some of the points outlined above, and alongside that take note of the suggestions by Frank Stanley about the responsibility of shop stewards to bring workers from the factories regularly to attend the union branches, we can make some headway.

I agree with him on the need for *consistent* attention by stewards and active members to getting good attendances. But it is not the whole story. An important feature is the thought given to the conduct of branch meetings to make them attractive to members, who should feel they are part of the branch and go away convinced they have got something out of attending the meetings. A lot more needs to be done towards interesting and attracting two important groups, the women and youth.

The position of women was completely ignored in the discussion. That is an indictment of us all. 1.9 million women are organised out of 7½ million approximately. In other words, only one out of every four employed women is in a union. Why?

There are a number of reasons. Some women do not intend to stay in industry and are less attracted to being in a union. Many in employment have additional household responsibilities which make it almost impossible to attend a union branch meeting even if they became members. But the main reasons lie at the door of the adult male trade union member and the attitude of the unions themselves. What do the unions offer women? Well, in engineering and shipbuilding a wage 31s. per week below the male labourer's rate. Every wage increase over recent years has widened the gap, because women only get a percentage of the male increase. Last time skilled workers got 7s. 4d. per week, unskilled 6s. and women 5s. 6d.

Women are not encouraged to attend trade union branch meetings even if they could, and there is often a reluctance to try and organise them in some factories. Yet in some professions, such as teaching, where women are in a majority, they are very well organised indeed, in no way behind their male colleagues.

Basically, it is a problem of approach, of an attractive programme, a consistent and conscious fight by the trade unionists for the economic and

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social demands of women—not least of which is equal pay for equal work, the rate for the job, and no discrimination in trade union rules against women.

The importance of the youth was dealt with in only two of the contributions and mainly by Bill Warman. Today the problem is more urgent and serious than ever. Constant reports are appearing about there being no jobs for school-leavers. In mining, railways and other industries less and less jobs are available, but the conditions do not improve. There is growing unemployment among many workers, and more danger of blind-alley occupations for those who manage to get jobs.

An examination of what the unions do for young workers is not inspiring.

Only in the A.E.U., the E.T.U., some sections of the miners, such as Scotland and Wales, and a few other unions is there any provision for special youth trade union organisation.

In the factory and on the job there are not many examples of special provision for youth representation. The Scottish miners elect a young miner to each branch committee. Comrade Warman gives the example of one apprentice elected to his shop committee. The A.E.U. organises the youth in junior workers' committees with help from districts and, like the E.T.U., has an Annual Youth Conference. But the T.U.C. General Council has led the fight against a proposal to arrange for a special Youth Conference and Youth Advisory Committee similar to that for women. Yet the need is urgent. In electrical contracting, employers have recently denounced their apprenticeship agreement with the E.T.U., and there are reports of the growing use of youth as cheap labour.

Fortunately, the youth themselves are not passive. In engineering a number of successful youth conferences on wages and conditions have been held. It was an unofficial apprentice strike in this industry that forced the engineering employers to concede to the unions the right to negotiate on behalf of apprentices and youth.

More needs to be done not only on the economic and social demands of the youth but by the trade union movement as a whole making special provision for trade union youth organisation and campaigning on a convincing programme of youth demands.

Trades Councils

Reasons of space prevented Comrade Pollitt from dealing with trades councils and trades council organisation. Yet they are a vital and somewhat neglected part of the trade union movement. In England and Wales there are 532 trades councils, grouped in twenty-two federations of trades councils, having 14,875 trade union branches affiliated. Unlike those in England and Wales, trades councils in Scotland have direct affiliation to the Scottish T.U.C. and elected representation on its General Council. The English and Welsh trades councils are registered with the T.U.C. and controlled through the T.U.C. Trades Council Joint Consultative Committee.

Anyone knowing the part played by trades councils during the general strike, the great unemployed struggles between the war, the Aid Spain movement or some more recent events, including rent struggles and strikes, will recognise their key importance as an integral and living part of the trade union movement. They can be an invaluable weapon in the struggle to build up trade union organisation, particularly in localities and industries which they know. As organisers and co-ordinators campaigning for the decisions of the trade union movement, and reacting quickly to new developments, they are indispensable.

The need in many cases is to strengthen their activities by lifting restrictions on their initiative, and in a number of cases bringing an end to bans and proscriptions enforced by the T.U.C. on a number of local trades councils in London as well as the present London Trades Council. The removal of all bans and proscriptions in the trade unions has become a matter of great urgency. In important unions like the Transport and General Workers' Union, it is a barrier to reviving full democratic life and more speedily realising the progressive policies passed at biennial conferences. In others, like the Boot and Shoe Workers and National Union of Seamen, bans and proscriptions are used to put over class collaboration policies that are against the members' interests.

Linked with this goes the fight in these and other unions to ensure periodic election of officials by ballot of the members. It needs to be stressed that such demands are not narrow sectional things only of concern to Communists. On the contrary they are vital for imbuing new life and hope in the trade unions and opening the gates to a great influx of members. One of the most important contributions which can be made to ending class collaboration in the trade union movement will be a complete break with all bans and proscriptions.

Nowhere is the negative policy of bans so obvious and so disastrous as in the field of international relations. Since the split in the world trade union movement caused by the T.U.C. and C.I.O. unions walking out of the organisation, we have had two major international trade union organisations. The World Federation of Trade Unions, embracing unions from the Soviet Union, China, the Socialist countries and many colonial peoples, but also including the two largest trade union centres in France and Italy, claims a membership of around

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90 million. The International Confederation of Free Trade Unions has its main support in the United States and Britain, but includes West European trade unions, some South American, and some unions from British Commonwealth countries. It claims over 50 million members.

Now contradictions in the capitalist world are growing apace. The European so-called Free Trade Area has collapsed in face of France's opposition as one of the chief members of the European Common Market. There are serious prospects of a trade war. Both trade union centres have similar problems: growing unemployment, demand for jobs and shorter hours, as well as wage increases to meet rising prices.

The danger of a hydrogen war with mutual annihilation is threatening all trade unions irrespective of their international trade union affiliations. The need for early discussions on common problems with prospects for joint action on these is growing in force. With our past history and present needs, it is imperative that British trade unionists give a lead to colleagues throughout the world and not least in the U.S.

On the factories, it is only necessary to hammer home their paramount importance in every aspect of trade union work. They will determine whether union policy decisions remain on paper or are translated into successful struggles. It is the factories, pits, mills and depots who will finally block the capitalist press and radio interference in elections and other aspects of union life.

The factories can change the whole character of trade union branch life and attendance. They can guarantee a huge increase in T.U. membership, including women and youth. But only if 100 per cent membership, with effective elected shop stewards' organisation enjoying the confidence and support of the lads on the job, is created and maintained.

Above all, to put into operation the main lines of approach postulated by Harry Pollitt and dealt with both in the subsequent discussion and this article, we require an inspired effort by Communist trade unionists and all Communist Party organisations. In my view there is nothing of so much moment as a full understanding on the part of Communist Party members and branches of the possibilities wide open before the trade union movement. Given such an appreciation we will get the surging forward drive to put into effect at least the main lines of march arising from the present discussion.

Then when we return to consider our next steps the discussion can be reopened, arising from experiences gained and victories won through putting into effect the results of the present discussion so effectively started in Comrade Pollitt's article.

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